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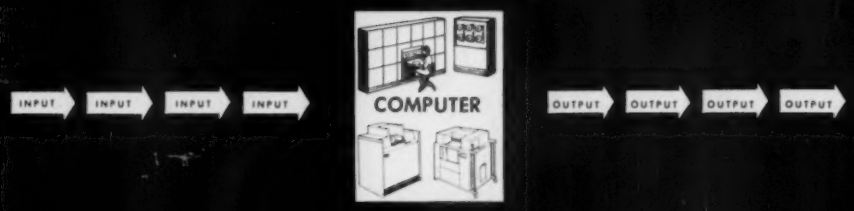

MARCH, 1961
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A McGRAW-HILL PUBLICATION

TEXTILE WORLD

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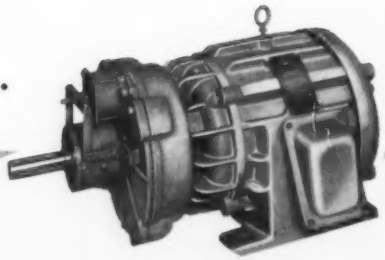
Textile-making magic didn't stop with Rumpelstiltskin . . .

Rumpelstiltskin's little trick was really easy. In the art of turning fibers into gold, *he* had no competition. But textile mills today must make a profit in the face of stiff competition. That's why so many of the modern money-makers in the field use the Whitin Model "P" Roving Frame.

Big factors in the magic of the Model "P"—fastest and most dependable of roving frames—are its clutch-brake power transmitter, *and the* DIEHL *experience behind it.*

DIEHL pioneered power transmitters for textile looms, has worked hand-in-hand with builders of textile machines for 75 years.

Take advantage of this long experience when you specify textile machines. On *any* kind of drive problem, contact DIEHL—a source of help that's just about as close to sorcery as you can find.



Whitin Model "P" Roving Frame—and its superior power transmitter, especially engineered and built by DIEHL. Automatically, in response to signals from its control unit, the DIEHL drive starts, positions, and stops the roving frame—combining high-speed operation with precise control during start-up acceleration.

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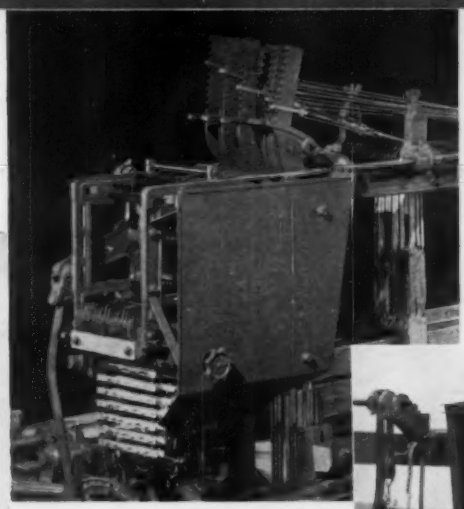
Chamblee (Atlanta) · Charlotte · Chicago · Needham Heights (Boston) · New York · Philadelphia

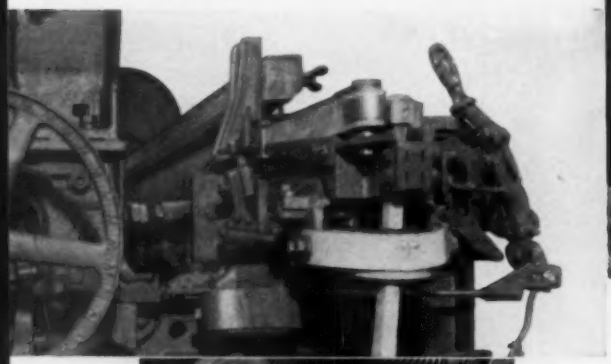
X-3

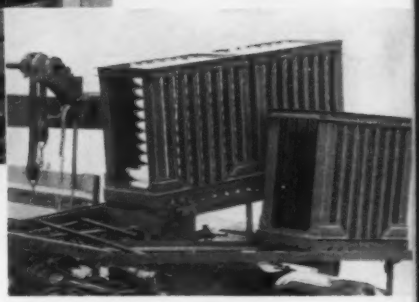
a new dimension in weaving



TOP MOTION
New strengthened Dobby
— 16 harnesses, 15/32 Gauge or
— 20 harnesses, 3/8 Gauge
Clock Spring up to 6 harnesses

ALUMINUM OR WOODEN LAY CONSTRUCTION





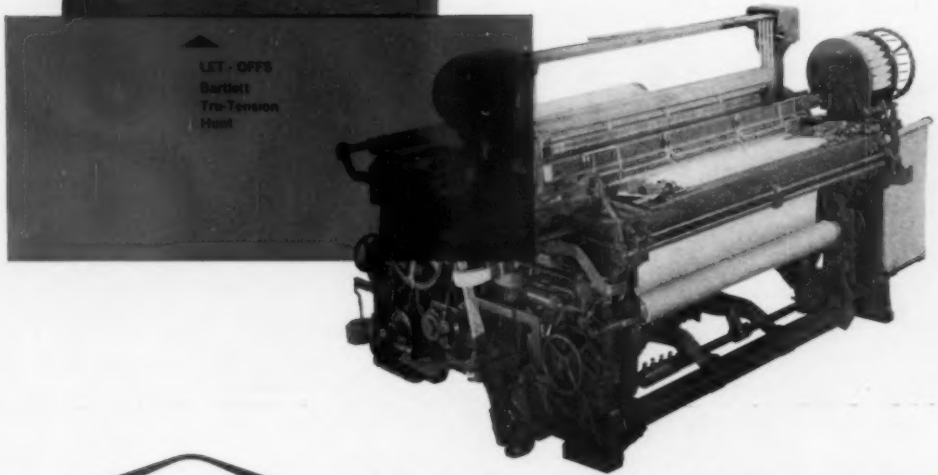
AUTOMATIC FILLING MAGAZINE

The X-3 Model Loom is designed to weave all of the fabrics normally woven on the X-2 and most synthetic fabrics commonly woven on the XD. This loom provides *greater versatility, increased speed, higher quality goods, and lower weave room costs.*

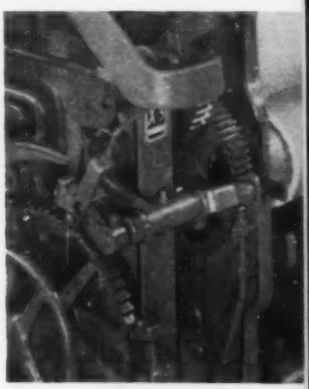
A weight increase of over 500 pounds in frame and shafting*, contributes to added stability, reduces vibration, and permits higher speeds regardless of fabric being woven.

**As compared with a Draper X-2 Model Loom*

LET-OFFS
Bartlett
Tru-Tension
Heat



IMPROVED TAKE-UPS
to weave a complete range of Cotton and Synthetic fabrics.



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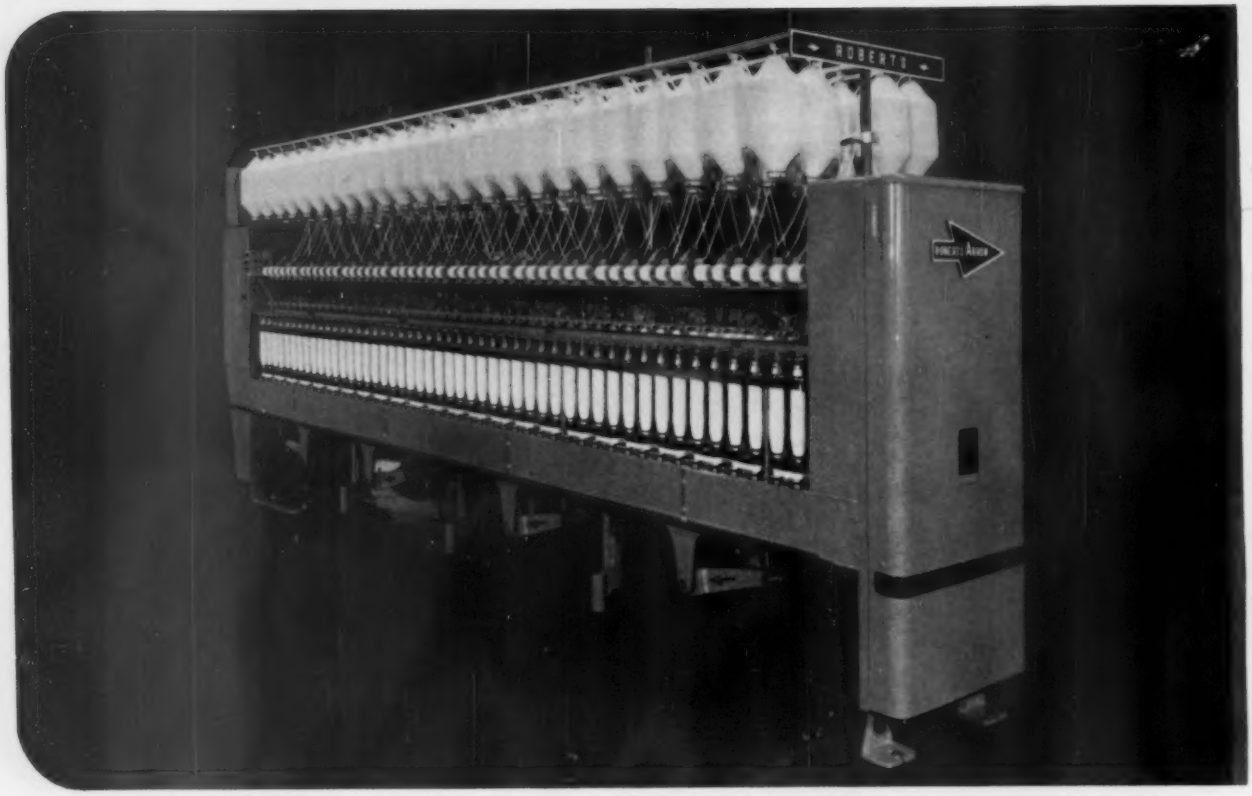
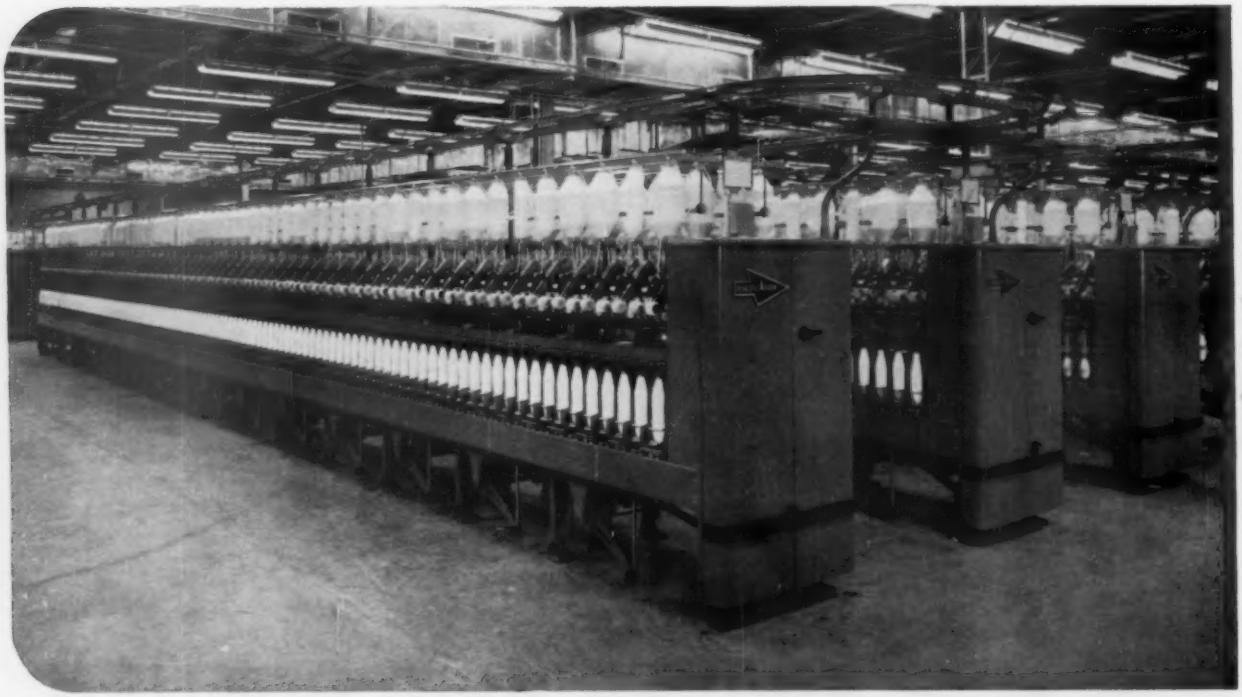


ARROW Model M-1 (above) for cotton system, Model WM-1 for worsted system. 25 inches wide.

ROBERTS ARROW SPINNING for both cotton system and long fiber system yarn spinning for natural and synthetic fibers and blends. High speed, all ball bearing, big package Arrow Spinning Frames in 25-inch or 36-inch width. Exceptional flexibility and simplicity of operation in the manufacture of improved quality yarns at reduced costs and modest initial investment.

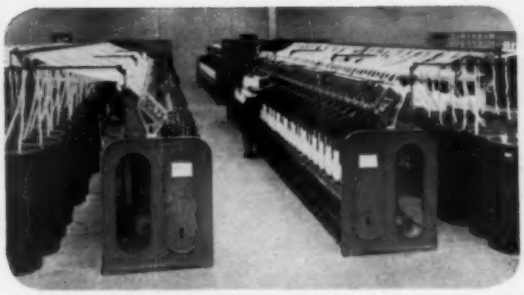
ARROW Model WM-2 (below) for worsted system, Model M-2 for cotton system. 36 inches wide.



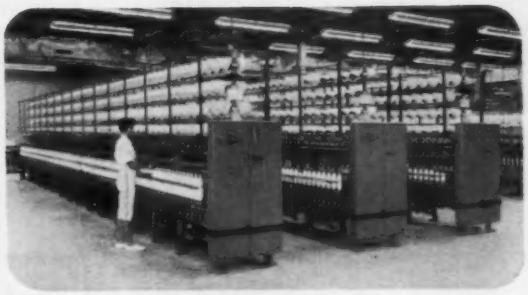
ROBERTS

Yarn Making Machinery

FOR COTTON, WORSTED, OR LONG FIBER SYSTEMS

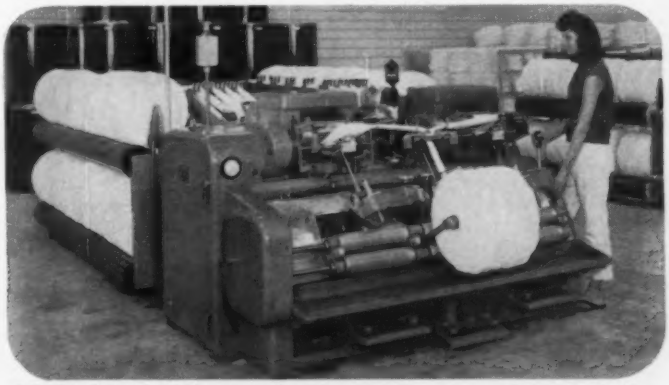


ROBERTS ROVING FRAMES are ball bearing rebuilt and feature all-new heavy duty ball bearing Roberts Double Apron Drafting Systems for cotton, short staple or long fiber synthetics, worsted and blends. 10x5 and 12x7 packages. Provisions for double headed spools.



ROBERTS TWISTERS for plying yarns are completely ball bearing equipped and designed for high speed ring twisting operations. 25- or 36-inch frames. Up to 4-inch rings and 12-inch bobbins. Package weights 1¼ pounds on cotton, ¾ to 1 pound on worsted.

Simplicity of design, rugged construction and high speed ball bearing operation are the hallmarks of all Roberts Company machinery. Roberts also supplies rebuilt spinning frames and modernization changeovers for mills' existing machinery.



ROBERTS-TEMATEX worsted system preparatory machines, including ParaBlenders, ParaDrafters and AutoEveners, are rugged, high performance machines for pinning, parallelizing, drafting and blending worsted and synthetic fibers prior to roving and spinning, and in top making plants. AutoEvener automatically and instantaneously corrects delivered sliver weight to within plus or minus 1%.

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Coming Next Month:

How to Control Office Costs

Are you overlooking a potentially vast source of cost-cutting ideas right in your own office? If your organization is like so many others, the answer is probably "yes."

What to do? Scan this excerpt from next month's lead article (by Greenville Management Consultant Emmett B. Simpson):

"Many office managers are doing an excellent job. Their offices are well organized and managed. But they, too, are fighting an uphill battle trying their best to do an effective job. Often neither they nor their employees have had the training required to operate efficiently. That is why office managers need help if they are to reduce office costs."

Watch for the April issue of TEXTILE WORLD to find out what kind of help Consultant Simpson has in mind—and how it can steer you on the right course to controlling your office costs.

On our cover: One step in the carpet-finishing operation at Firth Carpet Co.'s Laurens (S.C.) plant. Photo by Coxe Studios, Greenville, S. C.

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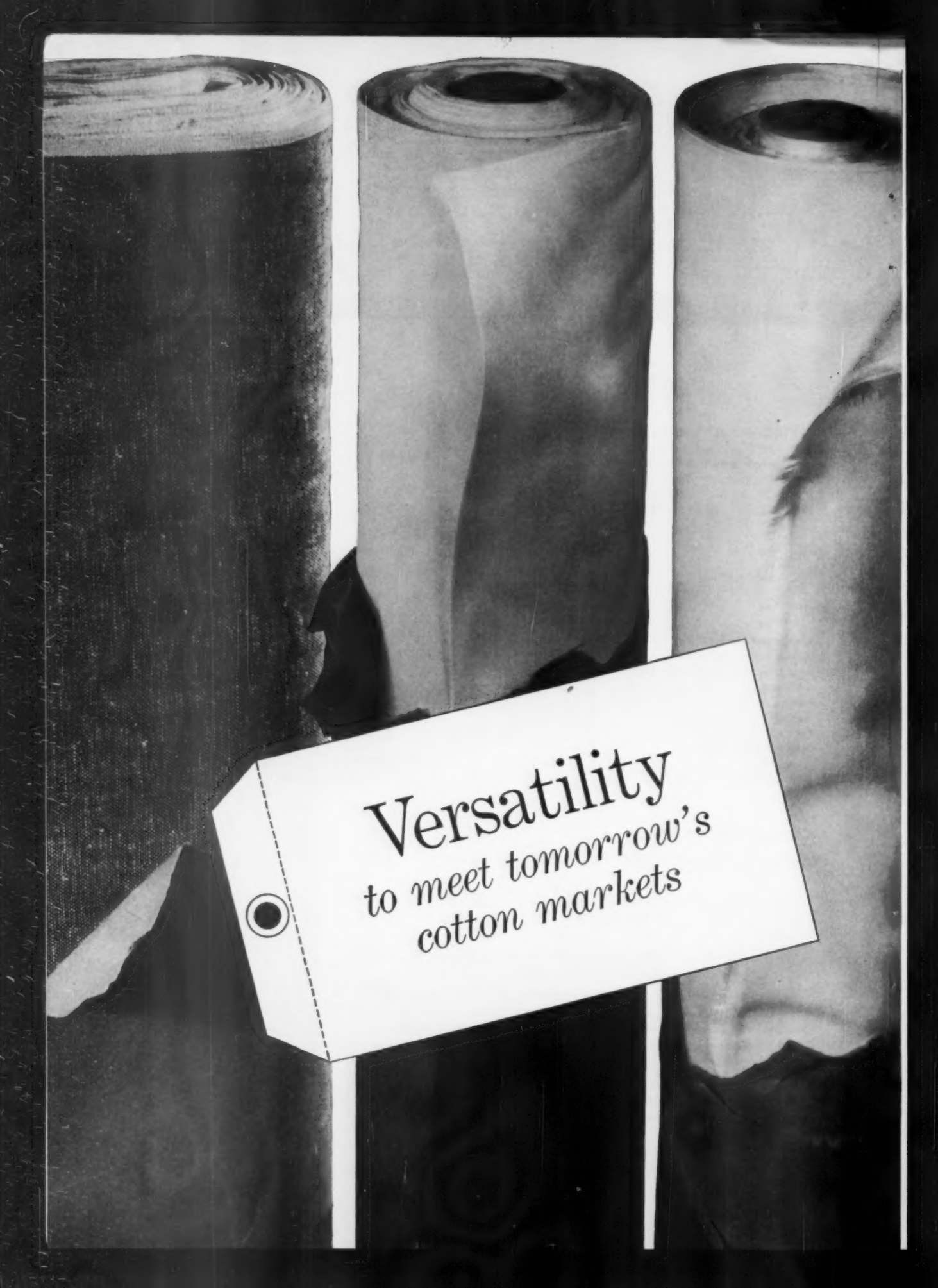
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to meet tomorrow's
cotton markets

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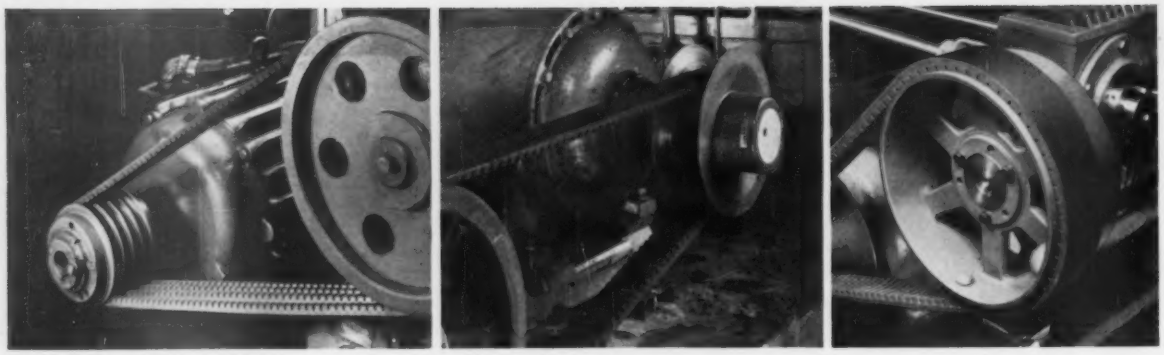

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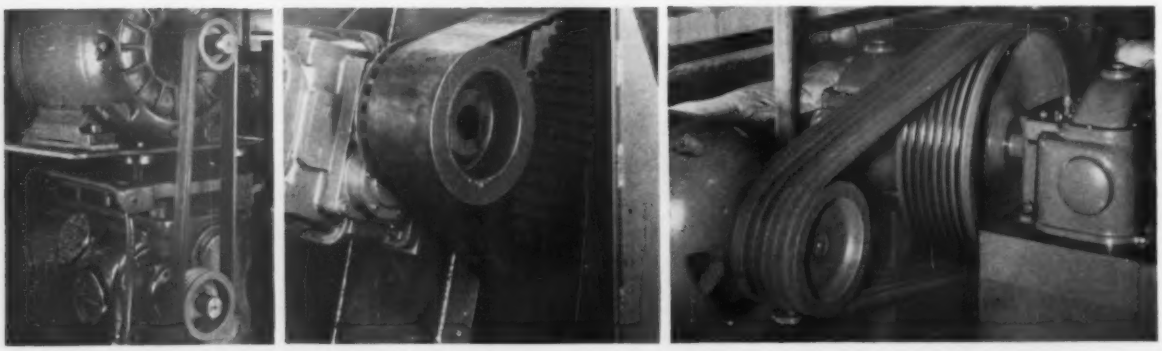

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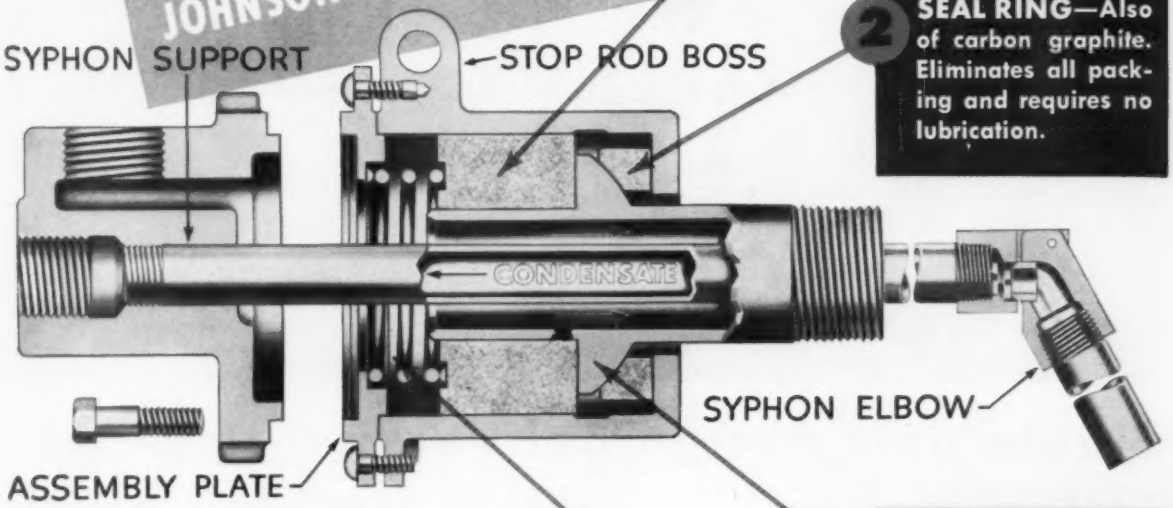

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2 SEAL RING—Also of carbon graphite. Eliminates all packing and requires no lubrication.

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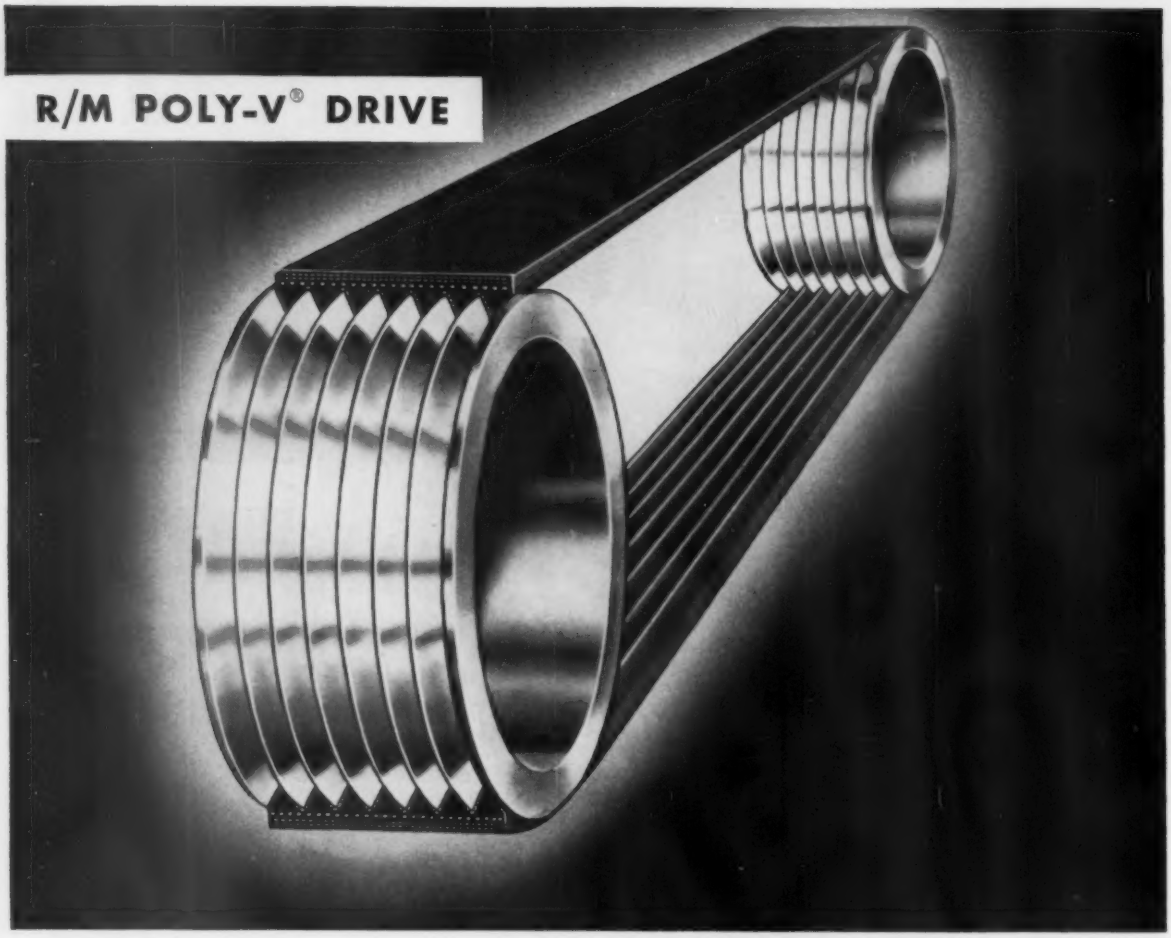

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RM154

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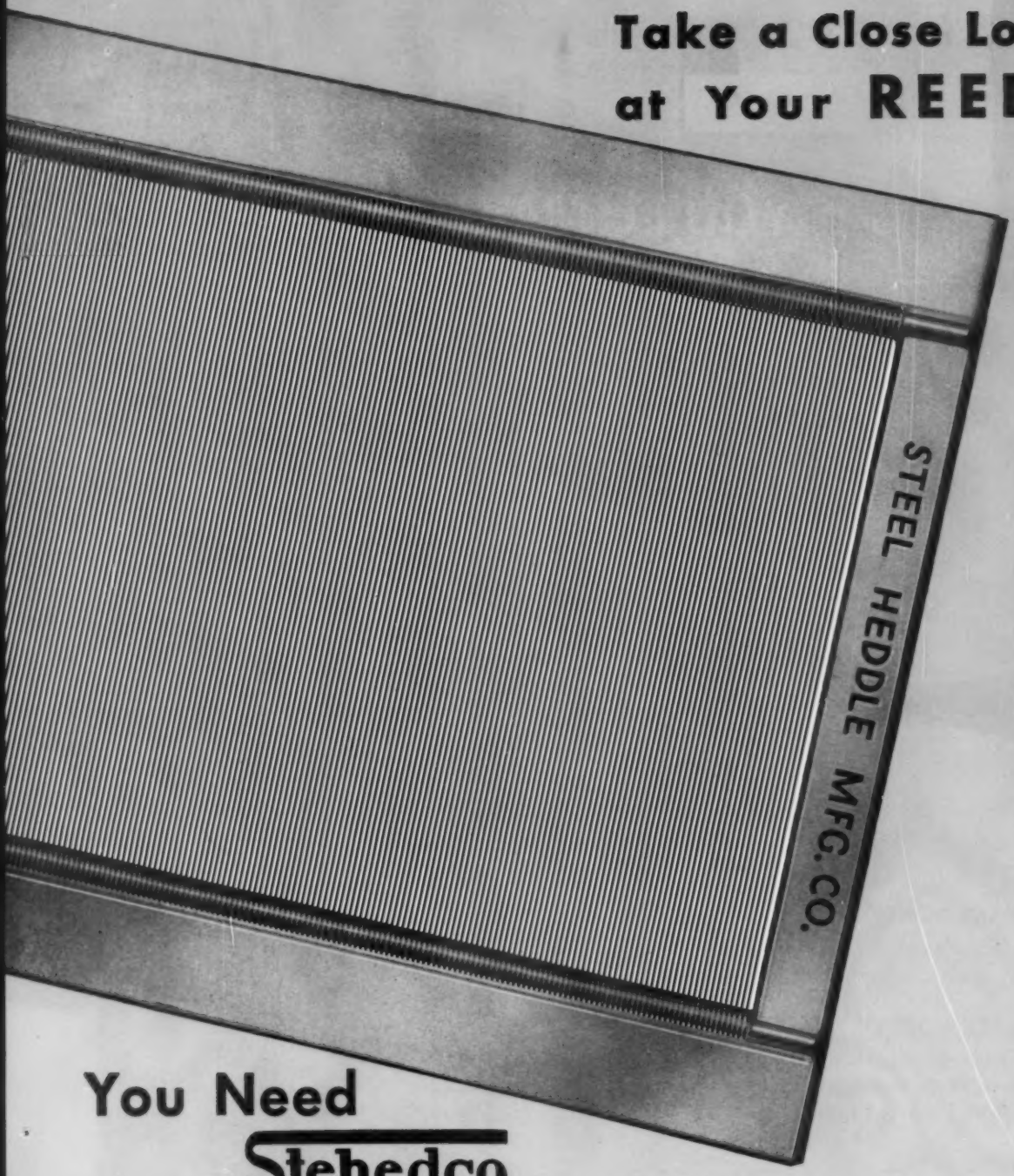

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Powell Corrosion-Resistant Valves are also rated up to 2500 pounds W.P. and for temperatures up to 1000F. For complete information and the answer to your corrosion, temperature or pressure problem, contact your nearby Powell distributor or write us directly.

*Registered trade names of The International Nickel Company.

#Registered trade name of Haynes Stellite Company.

150-pound W.P. Tank Valve. For mounting to bottom or side of vessel. Fig. 2309, disc opens into tank. Fig. 2310, disc opens into valve. Sizes, ½" through 8". Supplied in stainless steel, Monel, Nickel and other alloys. Available on special order in other sizes and pressures.

150-pound Stainless Steel Globe Valve, Fig. 2429. Outside screw rising stem and yoke, bolted flanged bonnet, integral seat. Available only with flanged ends. Sizes, 4" through 12". Angle valves of this design can be supplied on special order.

150-pound Steam Jacketed Gate, Globe, Lift and Swing Check Valves. Fig. 2800. Made especially to control the flow of heavy viscous media that require a heated jacket to keep them fluid. Shown, a Stainless Steel Gate Valve available with guided interchangeable solid or split wedge and integral seats. Sizes, 1" through 4".

115th year of manufacturing industrial valves for the free world

POWELL CORROSION RESISTANT **VALVES**

THE WM. POWELL COMPANY CINCINNATI 22, OHIO

The Whitin Model M Card

- New Automatic Card Feed
- New Tape Condenser
- Variable Speed Fancy Drive
- ATF Variable Speed and V Belt Drive for Feed Table
- V Belt Drive for Strippers, Breast, Doffer, Fancy and Condenser
- Antifriction Bearings throughout
- * P.I.V. Drives on Breaker Feed Rolls and Finisher Doffer

A "Natural Combination" for greater profit

The new Model M Card and the famous FLEX-SPIN Model L2 Wool Spinning Frame are two new "stars" for your production team. The Model M Card in either 60" — 72" or 84" widths has tremendous productive capacity. The FLEX-SPIN with its 16" traverse produces packages carrying up to 20 oz. of soft knitting yarn or up to 32 oz., or even higher, on weaving yarns.

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Whitin Flex-Spin® "L2" Wool Spinning Frame

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- Balloon Control Rings
- Traverses up to 16"
- Simplified Spindle Drive
- Side Shaft Twister Head Drive
- New Antifriction Spindle and Hand Brake
- Variable Speed Drum Drive
- * Pneumatic Waste Removal
- * Automatic Lubrication
- * Vari-Speed Drive

*Optional Equipment

For complete information ask your Whitin representative or write direct to us.

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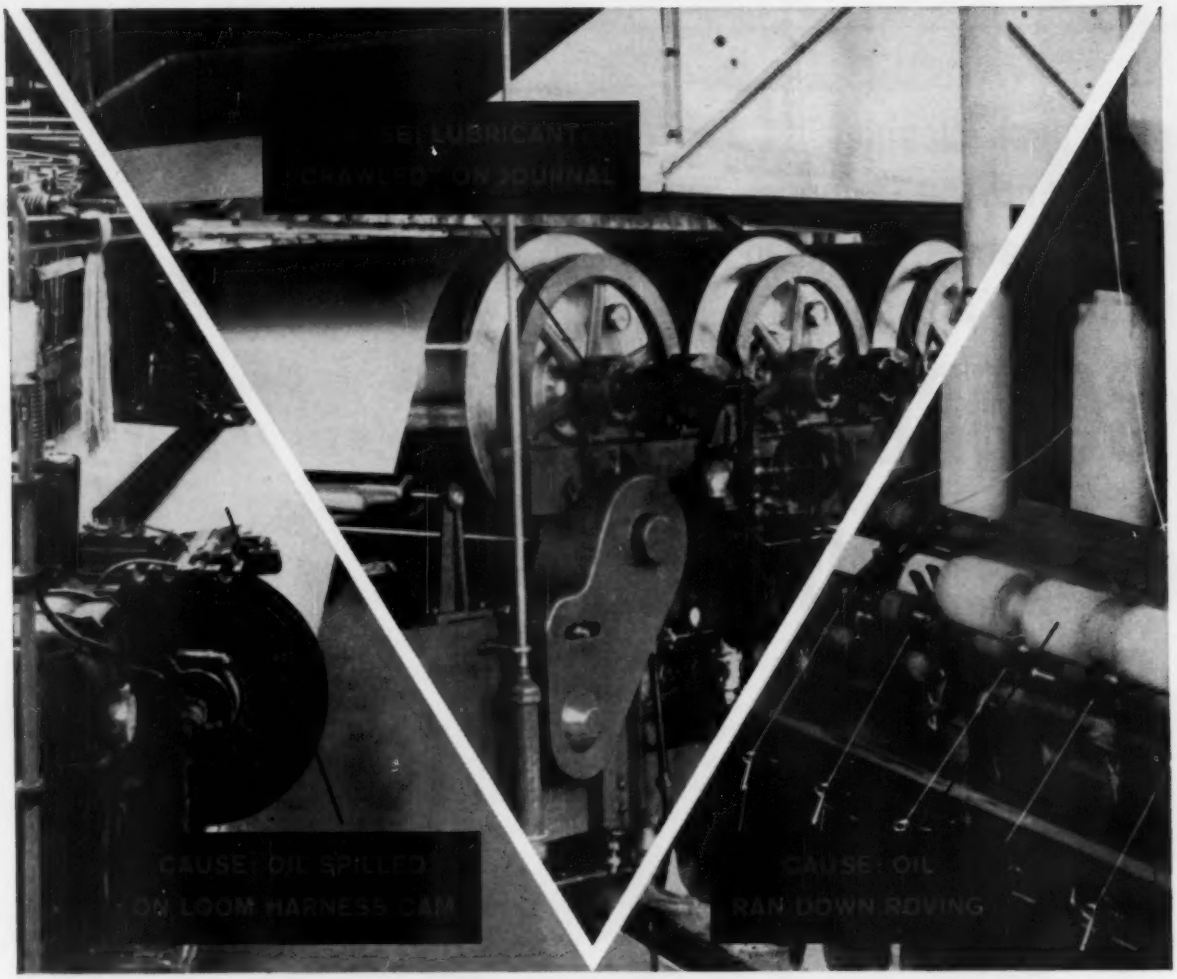

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STOP "SECONDS" WHERE THEY START!

You should be able to add up to 4% to your net profit simply by adopting Texaco's "Stop Loss" program. It is especially designed to stop contamination where it starts. Thus it can reduce oil spoilage and cut maintenance costs.

"Stop Loss" is a complete program, designed to help you realize all the savings available through organized lubrication. It provides (1) a detailed study of your mill's lubrication requirements—every department, machine, oil cup and grease fitting, (2) recommendations for a lubrication program fitted to your mill's needs, and (3) the basic "tools" needed to set up this program and make it work effectively and inexpensively for you.

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of CROSS-JET FRAME CLEANER

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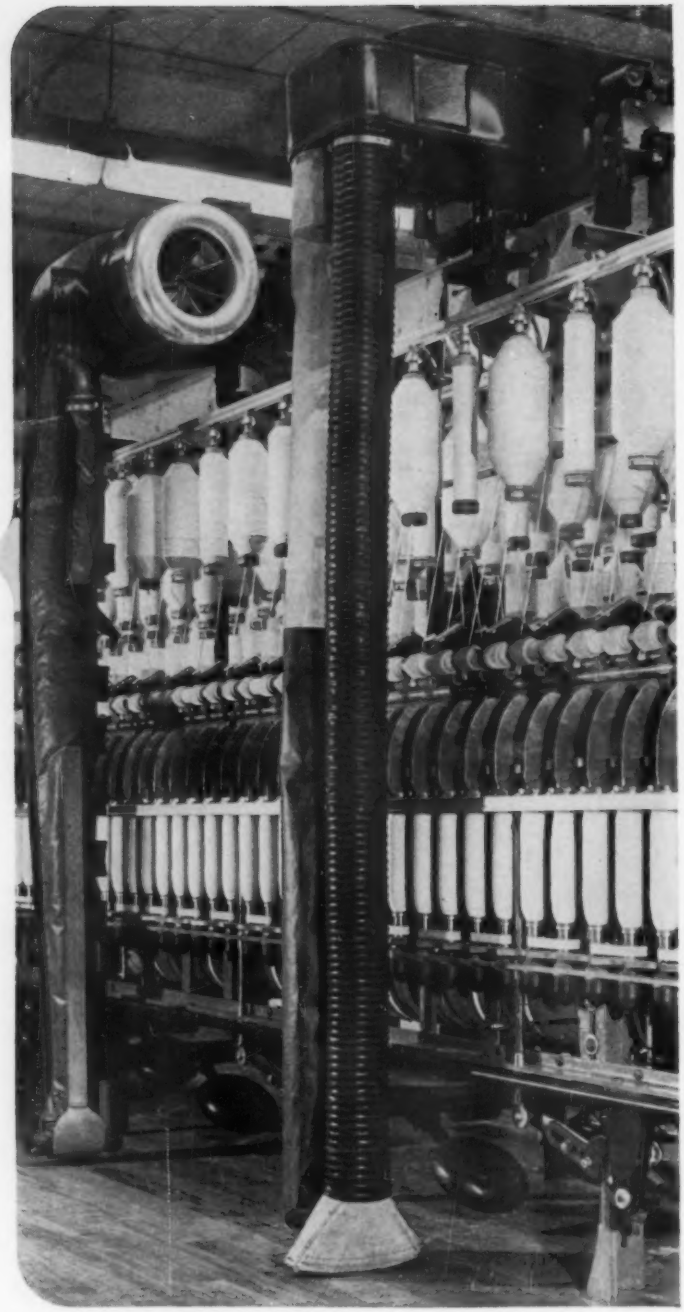

Sweeper automatically stops on contact—then automatically re-starts when free of obstruction.

1. Provides protection to frame and spindles from trunk swinging free of obstacles and back into frame.
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Entirely new type construction –
SINGLE CRANKSHAFT DRIVE –
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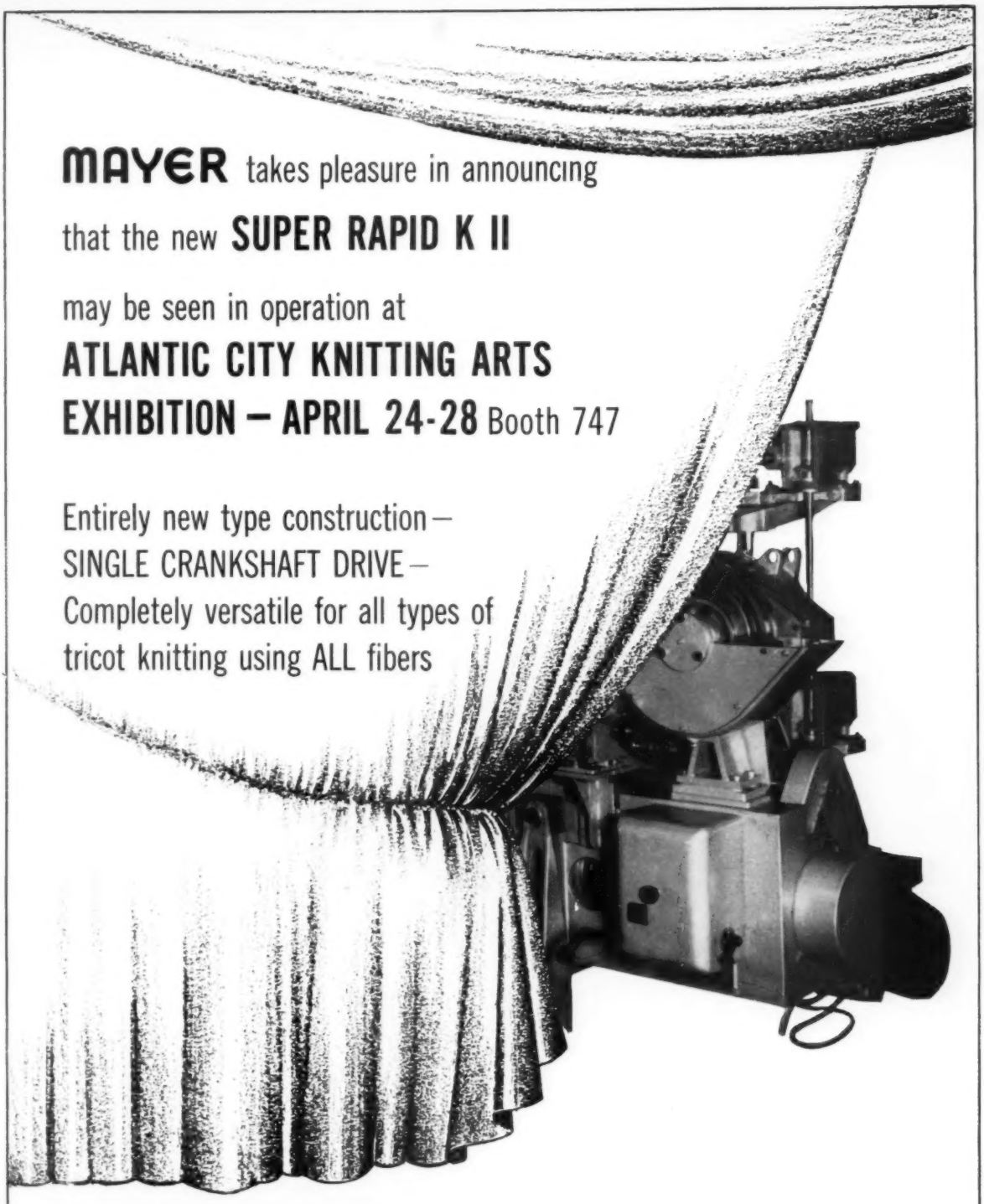

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KARL MAYER Textil-Maschinen-Fabrik GmbH, Obertshausen über Offenbach-Main, Germany

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. . . new tools to use when you need the fastness, quick-drawing and level-dyeing characteristics of neutral, premetallized types

Here are five new dyes that greatly extend the range of shades you can produce with the versatile Lanamids.

With all the well-known advantages of this superior class of dyestuffs for wool, nylon and modified acrylics, these new Lanamids are applied in a neutral or weakly acid bath without prolonged high-temperature processing.

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Lanamids are highly recommended for carpet wools, wool blends and unions, continuous raw stock dyeing and nylon upholstery fabrics.

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LANAMID RED GL

LANAMID GRAY GBL

LANAMID VIOLET 2BL

Idler shell on driving roll which contacts the small end of cone on the Model 102. If this shell sticks on the bearing, it will cause hard nosed cones and burned yarns. Therefore, it requires the best in materials and workmanship.

Close delivery thread guide and dog for Foster Model 102. These parts are made from steel forgings which require very accurate and expensive dies. The finish on these parts also plays an important part in their performance.

Profilometer (which measures irregularities in millionths of an inch) used by Foster to test the inside surface of a tube which is part of the Model 102 for processing Textralized* yarn (*trademark of Joseph Bancroft & Sons).

Micro-Projector, an optical testing instrument used by Foster to magnify the silhouette of an object 62½ times and thereby reveal imperfections invisible to the naked eye.

How to Get
FULL VALUE
From Your
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We don't have to tell you that in order to get full value from your Foster winding equipment, it must be properly maintained and repaired. The question is, how can you be assured of proper maintenance and repairing?

As to repairs, the first step is to use genuine Foster Repair Parts. Many Foster parts are made of special materials and have special finishes which cannot be duplicated with cheap substitutes. Furthermore, many Foster Parts are scientifically tested, before assembly, with high-priced testing equipment, which is not available in the ordinary machine shop. The illustrations herewith give a few examples of what we refer to.

Second, use *Preventive Maintenance*. By so doing you gain in 5 ways: — 1. Increased winding efficiency. 2. Less wear on and longer life of parts. 3. Better winding. 4. Improved customer relations (if you're a sales yarn mill). 5. Reduction in costly breakdowns. Without preventive maintenance, the same 5 gains turn into losses.

The best way to utilize preventive maintenance is to have a Foster Service Man make periodic inspections of all your Foster Winding Equipment, in conjunction with your Maintenance Supervisor. This Foster Service Man will give you a written report on the condition of your Foster equipment, will suggest improvements in maintenance practice, if necessary, and will recommend replacement of parts when advisable. There is no charge for this service *if* our representative is permitted to fit his visit to your mill into his planned call schedule.

If you would like to know more about getting full value from your Foster Winding Equipment, write for our three booklets: — "Preventive Maintenance", "Why Genuine Foster Parts" and "Emergencies are Costly". No obligations.

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A Yarn Winder for Every Purpose

Westfield, Massachusetts, U.S.A.

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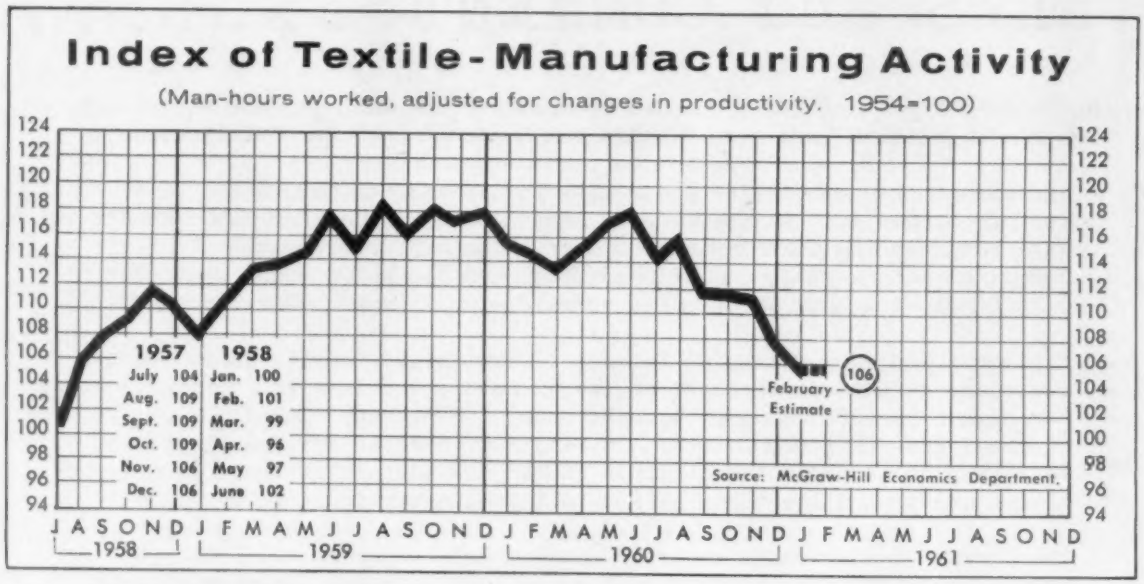

Coming: An Upturn

The stock market indicated in January that better business for textile manufacturers is coming. Standard and Poor's stock price index for textile weavers (figures at right) rose 7% in January even though textile industry activity is drifting lower. Apparently most investors feel that the textile producers will participate fully in the economic recovery, which is expected to get underway soon.

•

Optimism on the stock exchanges notwithstanding, the average textile manufacturer—as well as manufacturers in most other lines—reviewed the first month of the new year a bit ruefully. TEXTILE WORLD's index of textile manufacturing activity was 8% lower in January than in the same period a year earlier, paralleled by a 6% drop for total industrial production in the nation. In addition, textile industry employment sagged a bit in January as manufacturers cut back production to keep inventories at reasonable levels. Elsewhere in the economy, employment in almost every industry was slashed and unemployment surged upward. Despite the substantial layoffs, however, personal income did not take as bad a licking as it did during the month of December.

The weather, of course, has aggravated the lackluster business situation, but most observers of the economic scene remain convinced that an upturn is not far away. Within a month or two, a sprinkling of optimistic statistics should begin flowing in.

Figures of the Month

TEXTILE-INDUSTRY INDICATORS

	Latest Month	Previous Month	Year Ago
Textile World's Exclusive Index (chart above)	106	108	116
Employment (thousands)[1]	899.7	911.6	846.4
Production Workers (thousands)[1]	807.3	818.5	859.7
Weekly Earnings[1]	61.61	61.72	64.48
Hourly Earnings[1]	1.63	1.62	1.60
Weekly Hours Worked[1]	37.8	38.1	40.3
Production Index (1957=100)[2]	98	101	112
Wholesale Price Index (1947-49=100)[3]	95.0	95.2	96.6
Manufacturers' Sales (million $)[3]	1120*	1130	1260
Manufacturers' Inventories (million $)[3]	2630*	2660	2530
Inventories-to-Sales Ratio	2.35*	2.35	2.08
Exports (million $)[3]	195.1*	157.1	156.7
Imports (million $)[3]	85.7*	88.6	104.6
Stock Price Index (1941-43=10)[4]	26.59	29.86	31.04
Failures (number)[5]	3	11	6

NATIONAL ECONOMIC INDICATORS

Industrial Production (1947-49=100)[2]	155	157	168
Consumer Price Index (1947-49=100)[3]	127.6	127.5	125.4
Wholesale Price Index (1947-49=100)[3]	119.8	119.5	119.3
Civilian Population (millions)[6]	179.7	179.5	176.9
Unemployment (millions)[1]	5.4	4.5	4.1
Employment (millions)[6]	64.4	66.0	64.0
Personal Income (billion $)[3]†	406.3	406.9	395.7

* December; otherwise latest month is January.

1. Bureau of Labor Statistics; 2. Federal Reserve Board; 3. Department of Commerce; 4. Standard & Poors; 5. Dun & Bradstreet; 6. Bureau of the Census; † Annual rate.

NEWS and COMMENT. . . . . .

WORD ABOUT TEXTILE IMPORTS sounded up and down the land in February. Here are the highlights (see also "Washington Report," page 24 of this issue):

Industry spokesmen carried their plea for protection before the Senate's Pastore Committee. As the two-day hearings ended, Senator Pastore said he was convinced the textile-industry situation had deteriorated since his committee made a study and offered recommendations two years ago. But he said he did not know whether his committee would make new recommendations.

President Kennedy, acting on failure of the Tariff Commission to reach a decision, refused to increase duties on imported twines and cordage. Pleas for higher tariffs had been brought under the "escape clause" of the Reciprocal Trade Agreements Act. In many quarters the President's action was taken to indicate the attitude of the new administration toward world trade--and toward the textile-imports issue in particular.

The Bureau of the Census reported cotton-cloth imports at 454,898,000 square yards in 1960--89.3% more than in 1959, three times more than in 1958. On the other hand, it also reported that the United States exported $1,715,700,000 of textile fibers and manufacturers....52.4% more than in 1959.

At month's end associations of the Japanese cotton-textile industry asked their government to press demands for export-quota increases. They emphasized that they have scrupulously held to quotas while other nations, not limited by quotas, have vastly increased exports to the United States.

OUTSIDE OBSERVERS meanwhile took a look at the textile industry and at the outlook for business in general. Here's how they saw things:

"The downward trend in the general economy has no doubt imparted a subtle nudge to the slump in textiles. Regardless of the current textile situation, morale throughout the industry has stood up exceedingly well. Work schedules have been curtailed in an orderly manner, and mill inventories have consequently been held at nominal levels. Confidence in the future has been expressed by expenditures for new equipment estimated at $500-million during 1960, and a like amount is scheduled for the year ahead. When the tide turns, the industry is not going to be caught napping--that is assured." Bulletin of National Association of Purchasing Agents.

"The downtrend in textile mill earnings since early 1960 is still in progress. . . Although 1961 earnings for the group will be lower than in 1960, an uptrend should be under way later in the year, and highly favorable prospects appear in prospect for 1962." Standard & Poor's.

The U. S. Department of Agriculture reports average mill margins on 20 constructions at 27.50¢ in January 1961, 28.13¢ in December 1960, and 33.67¢ in January 1960.

Capital-goods producers cooperating in the quarterly McGraw-Hill Machinery New Orders Forecast predict new orders will average 2% below last year. Current quarter will be the low for 1961, with new business coming in at

successively higher levels in each following quarter. By the last quarter of 1961 new orders will average about 9% above the last quarter of 1960.

THE PROFITS SQUEEZE is getting tighter. Take 15 companies that recently reported sales and earnings (table below). Eight of them report sales up; 6, down; 1, steady. Ten of the 15 report earnings down; 5, up. Of the 6 reporting sales down, 5 report profits down and 1 reports profits up. Of the 8 reporting sales up, 5 report earnings down and only 3 report earnings up.

Company	Period	Sales ($1000's)	Change From Year Ago	Earnings ($1000's)	Change From Year Ago
Erwin Mills	Qu. to 12-31	$ 15,564	+ 5%	$ 326	-25%
Cluett, Peabody	Yr. to 12-31	112,318	+ 1/2%	4,907	+32%
Kendall	Yr. to 12-31	111,617	+ 1%	5,102	- 1%
Fulton Industries	Yr. to 11-26	51,820	+76%	2,227	+95%
Duplan	Latest qu.	8,118	+ 6%	34	-80%
Joseph Bancroft	Hlf. to 12-31	13,619	+ 2%	447	-17%
Bruck Mills	Yr. to 10-31	15,314	+ 2%	65	-63%
Indian Head	Yr. to 12-31	81,930	+45%	3,604	+ 3%
Chadbourn Gotham	Hlf. to 1-14	19,240	--	866	+68%
Burlington Ind.	Qu. to 12-31	241,301	- 7%	5,909	-47%
Cone Mills	Yr. to 12-31	188,510	- 1%	3,684	- 3%
Dan River	Yr. to 12-31	162,821	- 6%	7,265	+ 3%
Riegel Textile	Qu. to 1-21	23,080	-18%	278	-62%
Beaunit Mills	Qu. to 12-31	26,589	-14%	634	-60%
	9 Mo. to 12-31	80,941	-14%	2,569	-50%
Berkshire-Hathaway	Qu. to 12-31	12,636	-29%	541	-57%

TEXTILE MACHINERY and fiber manufacturers, chemical companies, and other textile related companies reflect the seesaw trend in textile sales and earnings. Here are a few reports:

Company	Period	Sales ($1000's) 1960	Sales ($1000's) 1959	Earnings ($1000's) 1960	Earnings ($1000's) 1959
Crompton & Knowles	Yr. to 12-31	$ 31,143	$ 22,800	$ 2,518	$ 1,487
Maremount Automotive	Yr. to 12-31	72,410	31,243	2,625	2,036
(1959 figures do not include Saco-Lowell Shops)					
Roberts Co.	Yr. to 12-3	7,388	5,270	203	61
American Cyanamid	Yr. to 12-31	578,390	583,575	46,821	52,284
	Qu. to 12-31	136,386	141,567	9,851	12,256
American Viscose	Yr. to 12-31	206,650	239,809	6,832	15,231
Hooker Chemical	Yr. to 11-30	149,821	149,817	12,698	13,402
Owens-Corning Fiberglas	Yr. to 12-31	218,178	211,336	14,635	16,172
Allied Chemical	Yr. to 12-31			51,286	50,041
National Starch	Yr. to 12-31	54,423	52,769	3,242	3,337
Wyandotte Chemicals	Yr. to 12-31	97,024	93,894	4,881	4,502

WASHINGTON OUTLOOK . . . . .

The Kennedy Administration is making good initially on its promises to the textile industry: A top-level committee study is under way.

The committee is on the cabinet level, indicating both the gravity of the domestic textile industry's competitive position and the importance the new administration is attaching to the problem.

Secretary of Commerce Luther H. Hodges heads the cabinet committee. Other members are the Secretaries of Agriculture, State, Labor, Treasury, and the Director of the Bureau of the Budget.

The committee has held its first organizational meeting. Now Hodges is working up a subcommittee that will look strictly at textiles - the full committee has a broader role, studying not only textiles but also other related matters, including price supports for raw cotton.

*

The next move to watch is an upcoming Senate subcommittee report on the textile situation. Sen. John O. Pastore (D.-R.I.) hopes to make public his findings this month. The report is sure to support the textile industry's position that some type of buffer is necessary to meet the imports problem. Most of the recommendations heard by the Pastore group, a sub-unit of the Senate interstate and foreign commerce committee, called for application of a quota system limiting imports of textiles.

Pastore's study is largely an updated report of a similar investigation he conducted two years ago. No administration action was taken at the time. Pastore will lead other textile-state members of Congress in an all-out effort to see that remedial steps are taken this time. If the administration drags its feet, legislation will be sought.

*

The Hodges cabinet committee wants to study the Senate report before going ahead on its own. Immediately after the first meeting of the cabinet committee in the White House, Secretary Hodges got on the telephone -- personally called Senator Pastore -- and told him the committee was interested in the Senate study and wanted to hear the recommendations as soon as possible. The Senate subcommittee is putting a rush tag on the report.

Labor support for the domestic textile case is causing sparks. The U.S.-Japan Trade Council talks of antitrust action if a threatened labor boycott comes off. The situation: The Amalagmated Clothing Workers of America, noting the employment threat caused by imports of Japanese goods, is considering ordering a boycott of the imports starting May 1. Union members would not sew Japanese goods in retaliation for high levels of imports of Japanese suits.

President Kennedy wants tax relief for business. Congress is expected to go along with his plans. Kennedy doesn't like the forecasts of a drop in 1961 expenditures on plants and equipment, for example. He wants to pump more money into the economy and one way of doing it is to spur plant and equipment spending One method of providing business with the needed funds is a broadening of depreciation tax rules. But another plan that is gaining favor is to allow a taxpaying business to deduct from its final tax bill a certain percentage of the money spent on plant and equipment modernization and replacement.

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News about

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For example, you can tailor the backing to give the "hand" you want with any fabric construction. These backings will also improve shape retention—make it easier to get the right fit without distorting the fabric. At the same time, they provide the extra selling advantages of dimensional stability and greater resistance to wrinkling, raveling, tearing and snagging.

Best of all, these coatings will really last. Tests show they won't discolor or stiffen even after aging, cleaning, or exposure to heat and light. They go on easily to stay on permanently.

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NO "NEW IMAGE" FOR US, THANKS

Seems nowadays practically everyone talks about "changing the image," "creating a new corporate image" or "giving the product a more dynamic image."

There's no such talk around Jenkins Bros.

When it comes to valves, we're as modern as tomorrow! But when it comes to a new corporate image, no thanks. Not for us. Our corporate image is nearly 100 years old, and it still suits us just fine. Here's why:

We'll Keep our Old, 1869-Model "Image" – Our Business Friends Seem to Like It

"A Fair Offer" was first published in 1869. Simple and forthright, it said that Jenkins Bros. wanted Jenkins Valves to be judged on performance. But — and this made the difference — not on performance in the average application, but rather in the very toughest one. Note that phrase, "the worst place you can find."

To us, it just naturally figures that the product which asks for the hardest job, will also be better, longer lasting and more trouble-free in regular, run-of-the-mill applications. Makes sense, doesn't it?

At intervals we republish "A Fair Offer" just because it does make sense to so many of our customers and friends. It's a useful reminder that products may change but *high standards* never go out of style.

JENKINS

Jenkins Bros., 100 Park Avenue, New York 17

Jenkins Bros

A FAIR OFFER

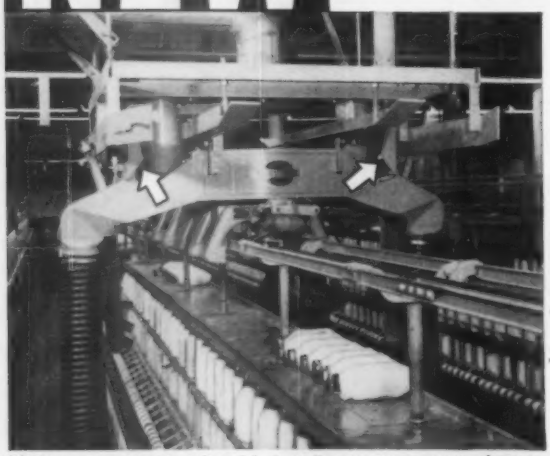
If you will put a Jenkins Valve, recommended for your particular service, on the worst place you can find . . . where you cannot keep other valves tight — and if it is not perfectly tight or it does not hold steam, oil, acids, water or other fluids longer than any other valve, you may return it and your money will be refunded.

Jenkins Bros

This early Jenkins Catalog carries the famous A FAIR OFFER which has appeared in every catalog since 1869.

NEW

Keeps yarn cleaner
Keeps floor cleaner
Boosts profits



Stationary vacuum nozzles strip traveling vacuum screen clean as traveling unit passes beneath them. Doors over screen open and shut automatically when unit passes beneath stationary nozzles.

Cleans best because:

1 Cleans upper frame, underframe, ceiling and floor.
2 Special air outlets are cut in the cleaner boots at the time of installation so air blast is where you need it!
3 Air reaches all parts of the frame including back guides, weights, idlers and samsons.
4 Necessary amount of air to clean any area can be delivered to that area.
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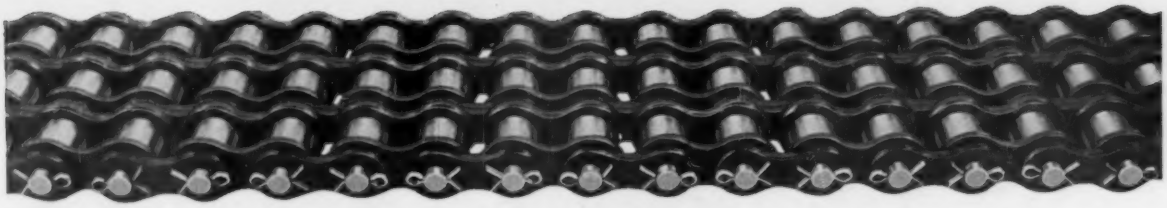

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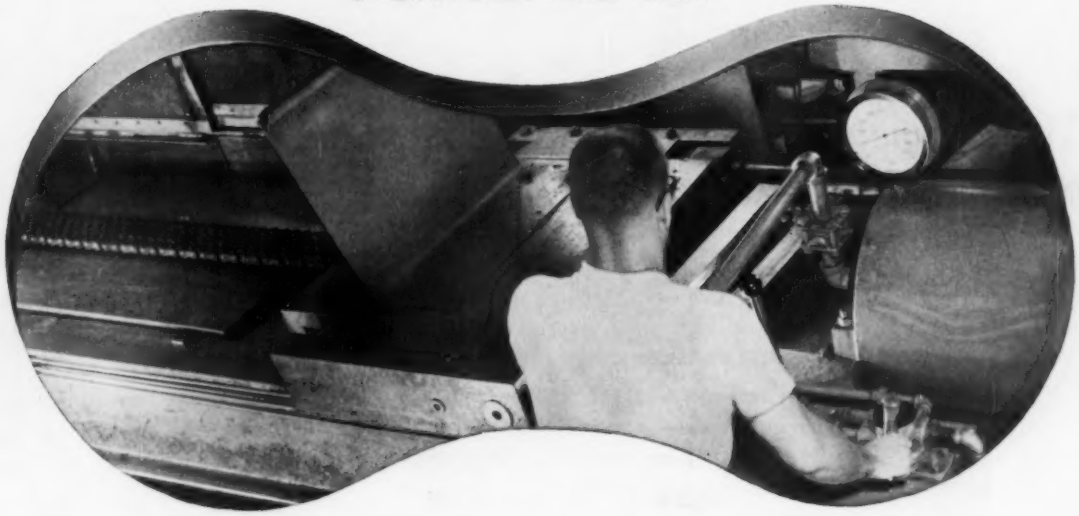
insure the precision performance
of LINK-BELT roller chain

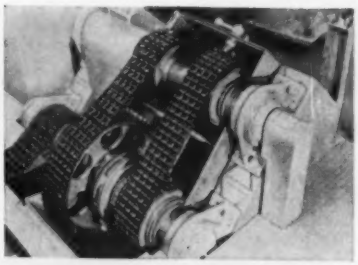


prestressing of multiple-strand chain guarantees

uniform load distribution

Unless each strand carries its full share of the load, multiple-strand roller chain may fail. That's why Link-Belt's prestressing is so vital. Prestressing seats and cold-works the chain joint parts . . . assures equal load distribution across the chain, reduced elongation in service.

Prestressing is just one of many *invisible extras* that contribute to the greater strength and endurance of Link-Belt roller chain. Others include precise heat-treat control, pitch-hole preparation, shot-peening and burnishing of rollers. These features—plus painstaking precision and inspection in every step of manufacture—assure you of chain that can easily cope with today's heavy loads and high speeds.



Quadruple-strand Link-Belt roller chain drives are used on this two-speed transmission. High speeds on short centers are easily handled.

For engineering assistance in applying industry's preferred roller chain, contact your nearest Link-Belt office or authorized stock-carrying distributor. Look under chains in the yellow pages of your local telephone directory.

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15,556

LINK-BELT

ROLLER CHAINS AND SPROCKETS

CIRCLE 29 ON READER SERVICE CARD

Robert Holmes, Overseer of Spinning at Standard-Coosa-Thatcher's Piedmont, Ala., plant examines yarn quality with Armstrong representative C. H. Cooper. Frame has double-apron drafting system equipped with Accotex NO-764 cots and NO-7876 aprons.

Your Armstrong man can help you get maximum production of quality yarn

When you specify Accotex roll covers and aprons, you get more than products to help you turn out high-quality yarn. You get the benefit of the specialized training and experience of your Armstrong man.

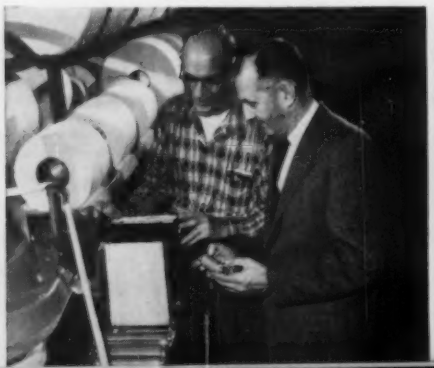
Whether you are faced with a high lap-up rate, excessive eyebrowing, yarn irregularities—or more routine problems of selection, installation, and maintenance of roll covers—your Armstrong representative will be able to make dependable suggestions

One thing that helps your Armstrong man in solving roll covering and apron problems is the wide range of materials in the Accotex line. Another is his interest in how these products perform—as shown, for example, in these pictures of Chet Cooper working with the Standard-Coosa-Thatcher personnel at Piedmont, Alabama.

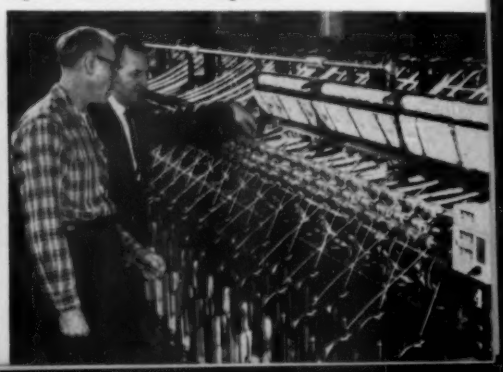
Your Armstrong man can be a valuable ally in getting maximum production of quality yarn. Call him in on any roll cover or apron problem. Or write Armstrong Cork Company, 6503 Dauphin Street, Lancaster, Pennsylvania.

J. T. Formby, Assistant Superintendent of Standard-Coosa-Thatcher plant, discusses characteristics of new Accotex cot with Cooper.

J. T. Fuqua, Overseer of Carding, checks performance of comber draw box rolls (Accotex J-490 and NC-727) with Chet Cooper.



Mr. Fuqua and Mr. Cooper look over roving frame equipped with Accotex NO-764 anti-static cots and new, super-flexible NO-7876 aprons.



Charlie Howren is in charge of the roll shop. Two Armstrong model "J" buffing machines are part of the shop equipment.

Armstrong

ACCOTEX COTS AND APRONS

More and more soft goods are sold in

Celanese Polyethylene Film

Soft goods look better to sell faster when they're packaged in clear, sparkling Celanese Polyethylene—with the most wanted combination of properties a film can have.
Can you afford to settle for less than these ten advantages?

1. Windowpane clear
2. Trampoline tough
3. Perfect printing surface
4. Inviting touch appeal
5. Rigid gauge control
6. Assured yield
7. Precision winding
8. Consistent slip performance
9. Superior handling in machines
10. Merchandising-minded service

See for yourself just how advanced a product Celanese Polyethylene Film really is. For samples and specifications, contact your Celanese representative, or write: Celanese Plastics Company, 744 Broad Street, Newark 2, N. J.

Celanese Plastics Company is a Division of Celanese Corporation of America. Celanese®

MATERIALS FOR Celanese MODERN PACKAGING

POLYETHYLENE FILM . . . ACETATE FILM AND SHEETING . . . PLASTIC CONTAINERS

MODERN EXTREMULTUS BELTING

MAINTAINS CONSTANT SPINDLE SPEED

For increased power transmisison belt efficiency use EXTREMULTUS on these textile applications too!

- WINDERS
- WOOLEN CARDS
- COTTON CARDS
- AUTO LEVELLERS
- PICKERS
- SPINNING FRAMES
- ROVING FRAMES
- OPENERS
- LOOMS

TWISTERS

INCREASE PRODUCTION Extremultus belting will not stretch . . . will not slip . . . even on starting. This enables you to maintain constant spindle speed on twisters for more production . . . every day. Constant spindle speed means better build up . . . uniform twist.

REDUCE MAINTENANCE Because Extremultus will not stretch you eliminate costly downtime for belt take-up, or replacement. Extremultus also reduces bearing loads and will outlast all other belting, eliminates lap failures.

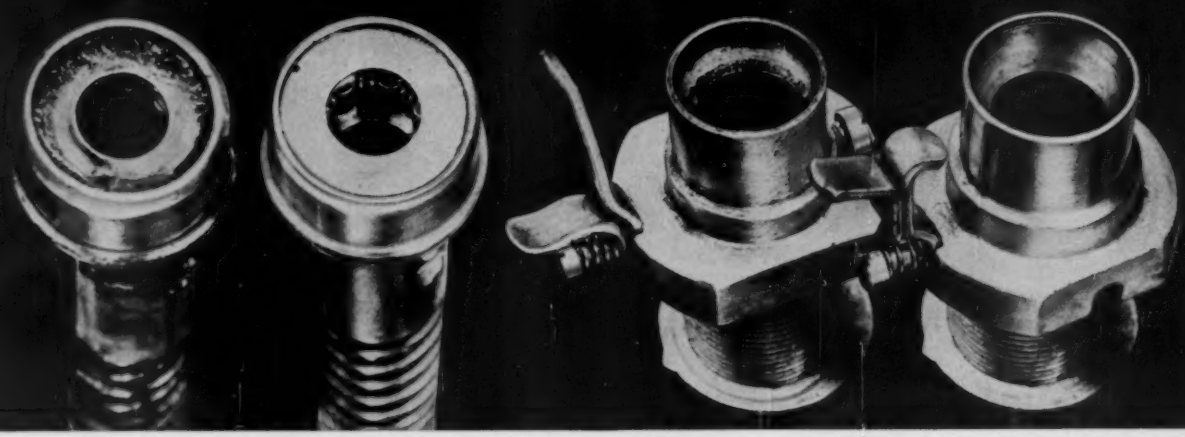
(Even oil from spindle will not cause Extremultus to slip)

Write for Extremultus catalogue and the name of your local distributor. Ask him to *prove* what Extremultus can do on the drive you select.

THE BEST DRIVE AT THE LOWEST COST

EXTREMULTUS, INC.

25-11 40th Avenue, Long Island City 1, N. Y.



Left: Bearing lubricated with competitive oil. *Right:* Bearing lubricated with Shell Vexilla D is still bright after 5000 hrs.

Left: Bolster using competitive oil is sludged and corroded. *Right:* Bolster using Vexilla D is virtually spotless after 5000 hrs.

BULLETIN:

Shell reveals how new sludge-fighting Vexilla Oil D reduces spindle wobble, saves yarn that once would have been lost.

A leading textile mill compared Shell's new Vexilla® Oil D with a good, competitive spindle oil. They ran both oils for 5,000 hours at 9,000 rpm on identical frames.

Vexilla D whipped competition cleanly: No deposits or corrosion to cause wobbly spindles or excessive ends down.

And Shell's new oil did not spoil an inch of yarn. It is made to scour out of all fibers—synthetics included. Read how this new Shell oil may save money on your frames.

NEW SHELL Vexilla D was developed to solve two major spinning problems:

1. To keep contaminants from adhering to spindle blades or settling in bolster cases—a common cause of wobbly spindles.

2. To cut down yarn losses due to oil misting. *Vexilla D readily washes out of yarn.*

Here is how new Vexilla Oil D functions:

New Shell Vexilla D is a *dispersant* oil. This simply means that Vexilla D keeps little bits of sludge (oxidized oil) and lacquer from "growing." And it prevents them from depositing on sensitive spindle parts.

See the difference

In six months or less you start seeing the results of Vexilla D's dispersancy. Spindle blades are bright and clean. No sludge deposits or lacquer in bolsters. No corrosion. No costly spindle wobble.

With no sludge deposits and corrosion there is less spindle drag. Fewer ends down. Less maintenance.

Resists foaming

Vexilla D is specially formulated by Shell to resist foaming. Powerful additives prevent foaming and misting—even at maximum speeds. Oil stays in the bolster where it belongs.

But Shell didn't stop there. A special cleansing agent was also added to Vexilla D.

No longer need good yarn be ruined by oil thrown up by spindles or by accidental spillage. Vexilla D does not stick to yarn. It washes out, as mill experience shows.

Check your Shell Industrial Products representative for complete facts on new Vexilla Oil D. Or write: Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

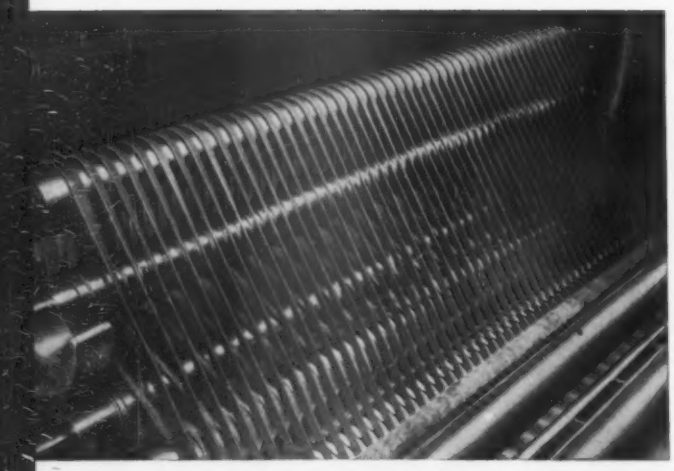
SHELL

A BULLETIN FROM SHELL
—where 1,997 scientists are working to provide better products for industry.

CIRCLE 35 ON READER SERVICE CARD

Dayco's R 792 Rub Apron...

your guarantee of trouble-free carding



There's a difference in Dayco Condenser Tape

Dayco Endless Condenser Tape, with a permanently square edge, provides a remarkable precision fit in the steel roller grooves. It virtually eliminates groove-jumping, twisting, and turn-over. And the precise compounding of Dayco Condenser Tape prevents stretching and cracking, reduces take-ups, eliminates static as well as oil deterioration.

Stealing is reduced to an absolute minimum, and better performance in general results when Dayco Condenser Tapes are on the job. Available in all lengths and widths, Dayco Endless Condenser Tapes are longer lasting, as well as lower in original cost.

Could any rub apron exceed the serviceability of the Dayco rub aprons of recent years? Or be stronger . . . or longer lived? Could any apron match it for quality—and quantity—of yarn?

Dayco engineers—knowing better than anyone else the high standards to which existing Dayco aprons were designed—might be excused for doubting it. But Dayco scientists are not disposed to consider *any* product the final word.

Dayco Research Brings Results

Now, through continuing research and experimentation comes a new Dayco rub apron, the Dayco R 792—able to combat more successfully than ever before the problems involved in the carding operation.

In laboratory tests that simulate mill conditions, actually *exceed* the stresses and demands normally found in use, the Dayco R 792 outperformed all comers. Here are some of the particulars:

With this new apron, you'll have 78% more strength at the ends . . . strength that enables it to withstand more than 100 lbs. of additional stress without damage to apron buttons. And you'll find that same factor of added strength throughout the body of the R 792 rub apron, too.

A. The Dayco R 792 Rub Apron provides 78% more strength at the ends, with buttons able to resist up to 100 pounds more pressure and still stay locked in place.

B. The inner and outer surfaces of the Dayco R 792 Rub Apron have extremely high resistance to oil of every sort. This includes natural oil of wool and other fibres, as well as all commonly used machine oils, anti-static agents, and special emulsions.

C. The Dayco R 792 Rub Apron is compounded of material highly resistant to abrasion, to give impressive reduction in surface wear. Its special textured surface has a coefficient of friction ideal for a majority of fibres and yarns. It retains it throughout its life without cleaning.

D. The Dayco R 792 is designed to hug the rolls closely, for better tracking and easy alignment.

Surface Superiority That Lasts

The surface of the Dayco R 792 has received a great deal of attention. Its texture is suited to a broad range of fibres and yarns. Its coefficient of friction is ideal for most carding tasks, having proven itself again and again in carefully-controlled test situations. Never varying from apron to apron, the R 792 surface texture permits consistent delivery of uniformly high-quality yarn.

In addition, you'll find that the Dayco R 792 surface holds up through longer use. Compounded of more abrasive-resistant materials, this apron retains its exact coefficient of friction through all its long life. It requires no oil of any type. It requires no cleaning, either, since one apron continuously cleans the other, in operation.

What about alignment? Again, no problem, since all Dayco rub aprons are designed to hug the rolls tightly for better tracking and perfect fit.

Dayco R 532 Offers Smoother Surface

Should you desire a smoother surface, you'll find Dayco's other fine rub apron, the R 532, very much to your liking. Developing less rub on fibres than the textured-surface R 792, it is engineered and produced to meet the same high performance standards . . . fully.

So choose either Dayco Rub Apron—or, if you wish, pair them, to obtain an intermediate degree of rub. Whichever you select, you'll be putting Dayco know-how . . . Dayco precision design . . . to work for you. Whatever your carding requirements, you'll find them fully met by these outstanding Dayco rub aprons . . . evidence of Dayco's continuing search for better ways of meeting the needs of textile men everywhere.

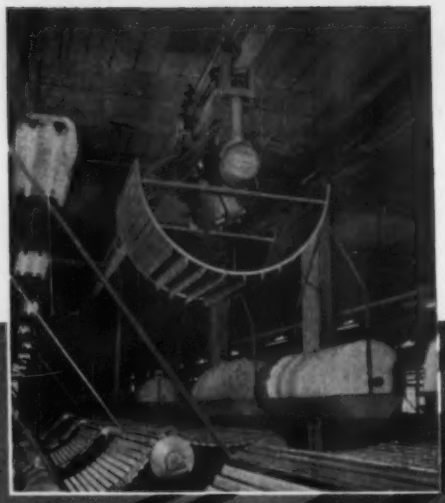
Ask your Dayco Representative to set up a trial installation, so you can check Dayco's findings, first-hand, in your own carding room. For further information, phone or write Dayco Textile Products Co., 401 S. C. National Bank Bldg., Greenville, S. C. Overseas Plant: The Dayton Rubber Co., Ltd., Dundee, Scotland.

Dayco TEXTILE PRODUCTS CO.

Division of Dayco Corporation

CIRCLE 37 ON READER SERVICE CARD

To the mill man who wants maximum overhead cleaning



You get maximum overhead cleaning with the Aero-Sweep Cleaner because:

- it cleans the objective more thoroughly with head-on air blasts at ½ the distance of other cleaners.
- it cleans all objects throughout cleaning cycle at predetermined frequency.
- only Aero-Sweep has an exclusive patented indexing feature which sets the cleaning pattern for any area, prevents lint accumulation on all surfaces.

You clean your mill at less cost with Aero-Sweep because:

- one Aero-Sweep Cleaner cleans up to three times the area covered by other cleaners.
- it ends manual blow-down by removing lint from ceilings, walls, overhead equipment.
- it minimizes slubs and gouts, improves quality of product.

For details, see **free illustrated** Bulletin 21A.
Clip coupon to letterhead and mail today.

Name_____

Bahnson
AIR-O-MATION

THE BAHNSON COMPANY • WINSTON-SALEM, N. C.

Vol. 111, No. 3, March, 1961

TEXTILE WORLD . . . Editorial

Candid Talk—and Needed, Too

That's our appraisal of the First Annual Conference of the American Association for Textile Technology (AATT). The meeting was held in New York City last month. Nearly 600 men (and a sprinkling of ladies in flowered hats) braved the city's February snowdrifts for the all-day gathering.

What was different—and significant—about this meeting? It was one of those all-too-rare occasions that draw together a wide spectrum of interests and activities from the textile industry and its allied fields. There were mill operating executives and technologists, fiber manufacturers, converters, end-product manufacturers, retailers—men from divergent but related groups that seldom meet. They came together to exchange experience, to air their problems, to bring into the open their complaints about each other, and to swap candid observations about responsibility for the industry's advances and its shortfalls.

Panelists raised some significant questions. Take five, for example:

- Does the industry rely too much on price as its chief weapon against competition? What about texture? Color? Design? Style? Durability? Quality?
- Is the industry bogged down in a mass of man-made fibers? Is there some way to bring simplicity and clarity to this confused situation?
- How can a manufacturer solve one dilemma he faces: high and costly quality standards on one hand and, on the other, relentless price competition?
- Along the line from raw material to retail product, who should (and must) accept responsibility for below-standard goods?
- How can a manufacturer reconcile the need to protect his process secrets with the gains that come from communication with others about problems and answers? For instance, one panelist reported that a dyer who blamed the fiber for faulty goods refused to admit the fiber producer to his plant to study the problem.

It's not important that the day of the meeting came to an end without complete answers to these questions and others like them. What *is* important is that these questions were brought into the open before a meeting that included interests all the way from fiber manufacturer to retail merchant—that discussion played on these questions from many quarters—that the specialized views that each of the several groups brought to the meeting gave way to broader understanding in every group—and that all groups joined in a high resolve to seek answers together.

In short, this first annual AATT meeting was a lesson in communication. The textile industry needs more meetings like it.

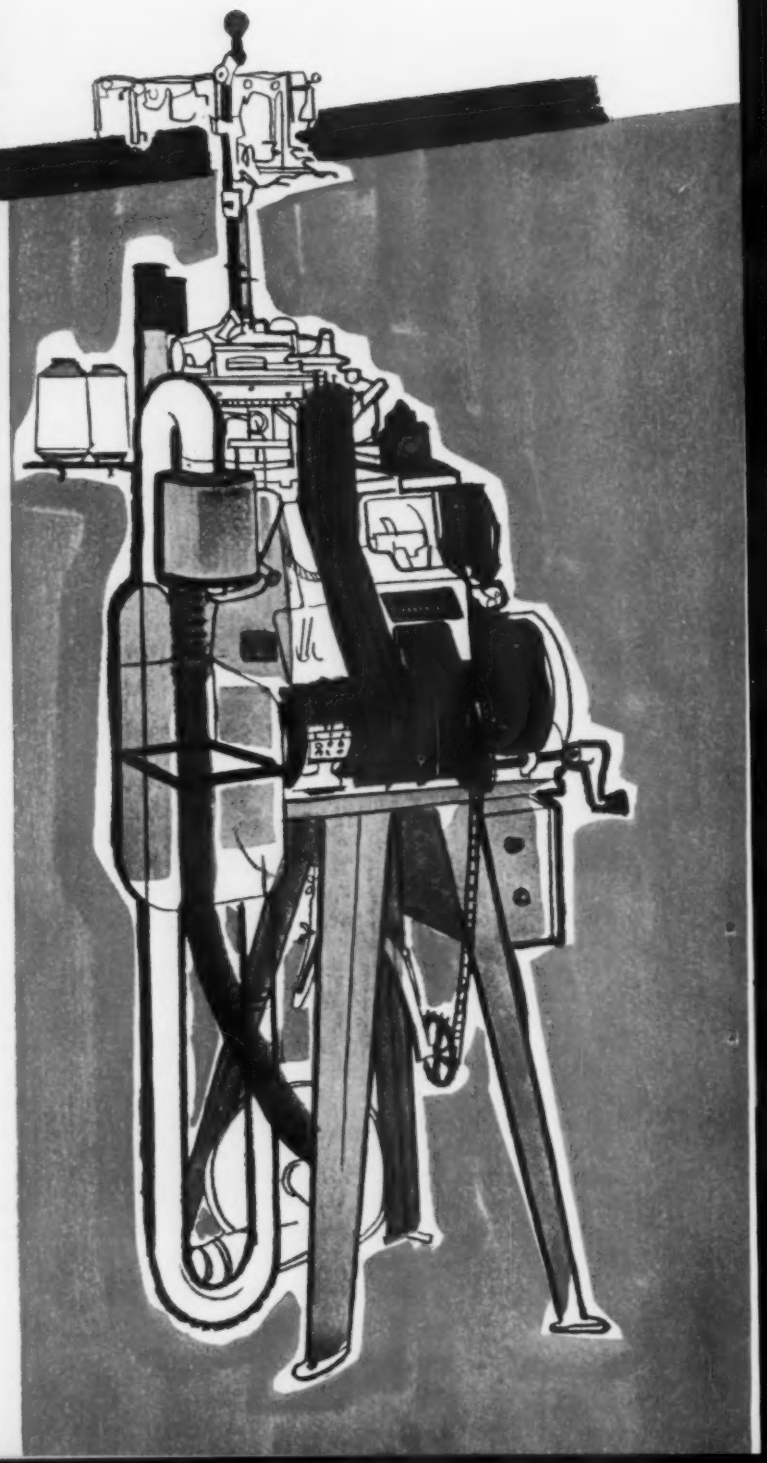
Object Lesson

Late news from Hong Kong says the textile industry there is in trouble. We pass this along not because we think it marks the beginning of the end of textile imports from Hong Kong but because of the reasons cited for the trouble. Here they are:

- **Declining demand.** Britain and the United States have trimmed purchases.
- **Production for inventory.** The industry did not match output to demand.
- **Sluggish selling.** Producers neglected German and African markets.
- **Blind reliance on forward orders.** Manufacturers did not appraise them realistically or continuously.

It's easy to slip almost unawares into the Hong Kong pattern. In fact, the U.S. textile industry has done just that from time to time in years past. But thus far in the current market dip it has not done so. We hope it won't—and we don't believe it will. The object lessons (Hong Kong, for example) are too clear and too fresh in memory.

now peak production of the finest seamless nylon stockings



announcing the new "Reading-Booton" twin-feed machine

- **2-feed automatic, highly efficient end trimmer. Trims all ends to a length of from ¼ to ⅜ inch.**
- **New high standard of fabric quality**
- **Continuous, high-speed production**

The new "Reading-Booton" Twin-Feed Machine opens new profit possibilities in the knitting of ladies' seamless stockings. It gives you twin-feed production, plus amazing simplicity of operation, and trouble-free performance.

New features developed by Textile Machine Works for the proven Booton Machine. This new precision machine belongs in your production planning. Backed by our world-wide service organization. You'll want to see the new "Reading-Booton" in operation before you buy any seamless machine. Call us today.

TEXTILE MACHINE WORKS

READING, PENNA.

TEXTILE WORLD

Management Bulletin

Thing you should know about . . .

The "Balance of People"

As gold flows out of America, so potential managers are flowing away from textile areas. For example, State of South Carolina, according to *Business and Economic Review* of University of South Carolina, loses "many . . . of the most able and ambitious young people" to other states. "This means depletion of a valuable economic resource." What to do? S. C. State Chamber of Commerce is encouraging companies to let it know what positions they have that might appeal to bright college graduates. Similar program for your state chamber is worth pursuing. And it may help solve your management-recruiting problem.

Textile Standards

Available now: 1960 edition of ASTM Standards on Textile Materials, with 24 new or revised standards out of total of 139, is yours for $9.75. Includes wool, man-made-fiber, tire-cord, carpet, hosiery, and nonwoven standards, among many others. New standards include: test for neps in wool, method of testing elastic fabrics, test for yarn imperfections. Write American Society for Testing Materials, 1916 Race St., Philadelphia 3.

How Capitalism Works

Useful survey, called "Debt Management in the United States," will give you the kind of background you should have to be able to discuss intelligently the fiscal policies of the Federal Government. Not easy reading, but rewarding if you stick with it, whether you agree with conclusions or not. Sample of contents: Budget and debt accounts; debt management and monetary policy; refunding operations; handling of budget deficits; the interest rate ceiling. Write Superintendent of Documents, Washington 25. Price: 40¢.

Safety Training

National Safety Council offers a low-cost safety course, especially for supervisors, in booklet form. Each of six booklets is for a one-hour training session. Package includes a manual for discussion group leaders. Ask the council (at 425 Michigan Ave., Chicago 11) for information on "Men and Motives in Safety Supervision."

Fringe Benefits . . .

. . . and especially pension, welfare, and unemployment benefits are becoming big business, National Industrial Conference Board reports. United States private industry laid out *$18-billion* in 1960 for such benefits. Prospect: More to come. Reason: Trend is to higher wages (up an average of 81% in 1950-60) and to much higher benefits (up 179% in the same period). Fringe benefits climbed from average of 4.9% of compensation in 1949 to 7.4% in 1960, NICB adds.

One of the Many Big Jobs a Computer Does

EMPLOYEE STATUS:
Department, section, shift
Employee number and name
Permanent task and rate
Quarterly average
Qualified tasks
Learner status
Pension and W-4 exemptions
Special assignments

DAILY WORK DATA FOR EMPLOYEES NOT ON CLOCK:
Hours worked
Units produced
Downtime
Department, section, shift, task, and rate

INPUT INPUT INPUT INPUT

RATE DATA:
New standard numbers
Void standard numbers

DAILY WORK DATA FOR EMPLOYEES ON CLOCK:
Hours worked
Machines assigned
Changes from permanent status

STANDARD LOOM DATA:
Department, section
Loom number
Size and type code
Dial code (2-or 3-shift clocks)

DAILY LOOM DATA:
Clock readings
Looms stopped
Warp changes
Downtime

TEXTILE WORLD SPECIAL REPORT:

Data Processing Today: Problems

WHAT DO YOU get when you invest in modern data processing equipment and techniques? Depends on whether you're looking for the kind of program in the flow diagram above, or something more modest. Listen to three textile executives as they describe what each of their companies is after in data processing improvement—what each of them hopes to gain:

● "The major reasons we looked into advanced data processing techniques were to get more timely, more accurate reporting; to cut clerical costs and costs of conventional tabulating equipment; and to do jobs we can't do on regular equipment."

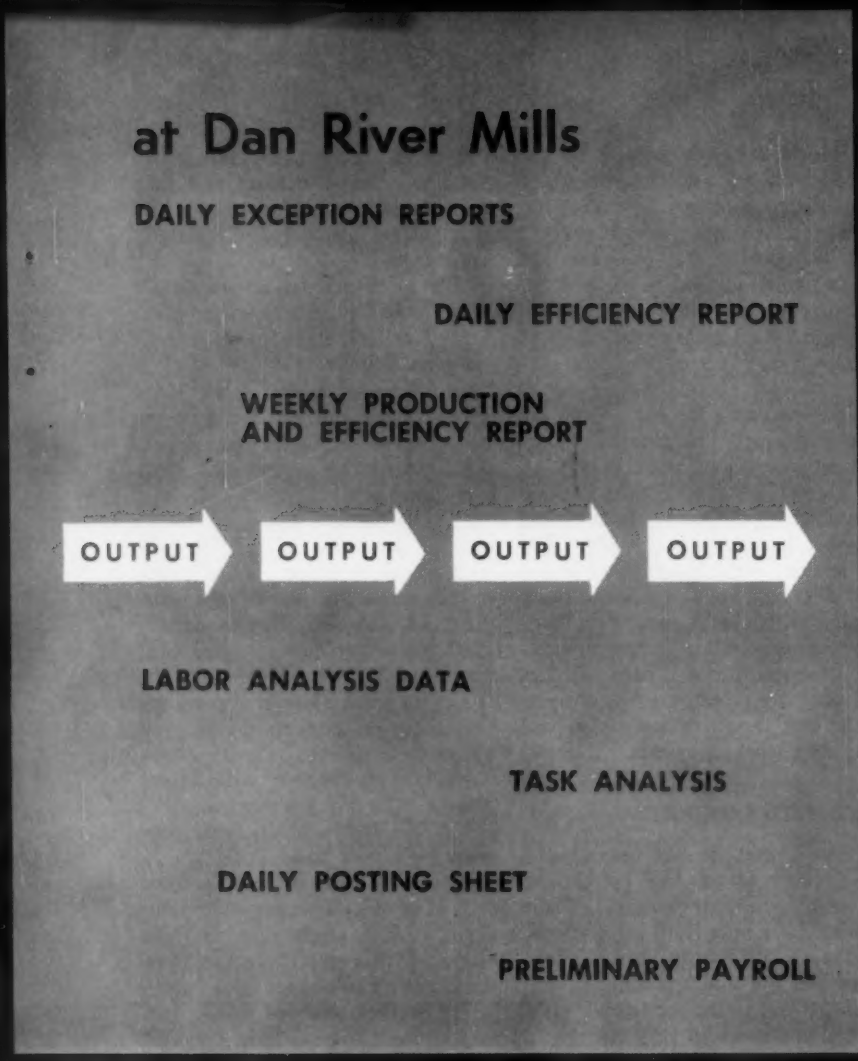
● "Primary impetus for us came from general business growth of the company. We figured that the manual systems that we had were not only out-of-date, but inaccurate and expensive, too."

● "We began investigating electronic data processing (EDP) because of the demand for more timely, accurate inventory control and production control reports. It didn't seem feasible on conventional tabulating to do the volume of work we wanted done in the time we wanted it done in."

IMPROVING WITHOUT COST

Better date processing without cost increases is an attainable goal with the new techniques, the companies report. Even the companies that lay out as much as $250,000 annually in equipment rentals are meeting these costs with savings in labor and in rentals of obsolete equipment that's no longer needed. As American Thread Co.'s George W. Leopold puts it: "Our project is figured to break even. The payoff comes in intangibles."

As for staffing the new computer installations, numbers vary. Dan



About This Report . . .

TEXTILE WORLD polled ten representative companies in the industry to find out how management is using or planning to use modern data processing methods and equipment.

These 10 companies range in size from 1,500 to 12,000 employees. Of the ten, four already have computers in operation, four plan to install one soon, and two just don't seem ready to take the step yet. But even these companies that have not yet gone into advanced data processing techniques are moving ahead on their own. They are expanding their conventional electric accounting-machine techniques.

One common denominator in each of the ten is this: They all belong to the Textile Data Processing Association, an idea-exchange organization that serves the data processing interests of almost every major producer in the textile industry.

The ten companies participating in this survey: Bruck Mills Ltd., Pepperell Mfg. Co., Inc., Dominion Textile Co. Ltd., Chatham Mfg. Co., Avondale Mills, Inc., American Thread Co., Chicopee Mfg. Corp., Dan River Mills, Coats & Clark, and Amerotron Corp.

Practices, and Payoff

River Mills uses 59 people, including five in the computer section. Chatham Mfg. Co. has 32. Dominion Textile Co. Ltd. expects to run a full-scale computer program with just 29 people. Amerotron Co. plans to run its program with a staff of only 7 people.

Numbers alone, of course, don't tell a full story. A company's product mix is also a factor to be considered. Operations involving heavy billings of a great variety of products usually take more people than those that have relatively few billings or a limited variety of products.

FINDING AN OPENING

Where do you start? If you take a leaf from those already practicing EDP techniques, you start with your strength—the thing that is most important to you. If you're Chatham Mfg., American Thread, or Coats & Clark, you concentrate on sales analysis and billing because that's of prime importance for a company with a sizable retail marketing operation. Inventory control is most important to firms like Dan River Mills and Chicopee Mfg. Corp. because of their primary interest in industrial markets. In short, your starting place should be the operation that is most important, most vital to your over-all profitability and goals.

Even with this kind of broad guidepost, though, it takes a lot of preparatory work to set up a workable EDP system. J. E. Sandlin, controller of Amerotron says:

"We made a study of all manual reports now rendered—their clerical and material costs and the time it takes to prepare such reports manually. These studies are being compared with the expected cost of the data processing equipment. Only those reports that promise real

. . . *Begins on page* 42

savings will go into the final program."

Charles M. Harris, assistant controller at Dan River Mills, describes the stage setting at his company like this:

"Our systems department, which had 11 to 13 persons, with the aid of two machine-manufacturer representatives, spent 18 months on the pre-installation studies and programing. About 45% of the time was spent on inventory-control application. That involved about 35 programs covering daily, weekly, period-end, and annual work. Included were three trips to the supplier's test center, where 40 hours of test time was used. During this 40 hours, we tested our daily and weekly runs on sample data. We partly tested period runs, too."

But sometimes even this kind of careful preparation just isn't enough. Mr. Harris adds:

"We found that this testing was insufficient when we were confronted with live data. We went through a lengthy parallel operation during which programs were corrected or reprogramed. We found out that some of the programs took so long to run that we had to make major changes in concept to cut down running time. Because the whole job was integrated, all the programs had to be completely checked out before we could drop the old system and make savings."

REPROGRAMING A JOB

This reprograming—the process of revising instructions that a computer must follow—is not so unusual. It has happened to others. (American Thread is a case in point.) And it might happen to you.

Fact is, reprograming is about the least that can happen to you when you get into EDP preparations. One company, after investing substantially (both time and money), finally decided its program just wasn't going to work at all as it was set up. It threw the whole thing out the window. Now it's starting up all over again.

Obviously, then, there's more to EDP than meets the eye. What are the problems? The pitfalls? Where do programs go wrong? Why?

There are no cut-and-dried answers. Equipment failure has been a factor in some mills. But companies aren't too eager to blame the new equipment. They're more ready to blame themselves. Planning, understanding, or top management support hasn't been what it should be in more than one of these mills that report difficulties in setting up a working system.

EIGHT TIPS ON EDP

Here's what the men with experience have to say to those who haven't yet made their move. Their advice falls into eight suggestions.

Tip 1: . Be sure to have the support and the understanding of top management in the company. Without it, you can't go very far.

Tip 2: Don't oversell EDP to top management.

As one company says, "Do that and they'll think the computer is magic and that they'll be able to get anything and everything from it on a moment's notice."

Tip 3: Be prepared for "normal resistance to change."

Might as well resign yourself to the hard fact about resistance to change: You can overcome it only by good performance from a new system or method.

Tip 4: Be ready to quell employee fears about job security.

Many companies are meeting this hazard by declaring as policy that job reductions will come as a matter of normal attrition. Add to that clear and complete explanations of the EDP program through the mill newspaper or magazine, plus special booklets, and you've gone a long way toward getting the active support of your employees.

Tip 5: Get agreement.

Make sure everyone is heading in the same direction. Be sure problems are clearly defined and fully understood and agreed upon. And then "Get it in writing," one systems man urges.

Tip 6: Don't set an unrealistic target date for completing projects.

In fact, add 25% to your most optimistic estimate. Allow plenty of time for planning, too. "Do it on a crash basis and you'll end up reprograming," one man cautions.

Listen to this observation from one company:

"On a manual basis, 15 clerks may be preparing 15 reports daily with a noon deadline. If one of the women is sick, that doesn't affect the other 14. A substitute is usually available to get the fifteenth report out on time. But if any trouble comes up when all these reports are scheduled on one computer, that makes them all late." *Moral: Leave a cushion of time in your report schedules for the unexpected.*

Tip 7: Try to justify your program on a cost basis alone.

Intangible benefits can become matters of opinion among your associates. And when figuring your proposed costs, don't forget to allow for plenty of overtime.

Tip 8: Pick qualified people and, in addition, make certain they get adequate training.

VERDICT: FAVORABLE

With all these complications, you might expect these men, when you ask them about their experience in setting up such a program, to sit back and sigh that they're sorry they ever got mixed up with EDP.

Not at all.

"Gratifyingly successful," is the way one man describes his company's venture.

"Really works fine," says another. His company cites savings in time, elimination of reports, and availability of new information as gains.

"Greater speed, accuracy, and flexibility," says a third.

"Improved customer service," says a fourth.

Maybe EDP is not a step to be taken lightly. But from all indications, it's a step soon to be taken in more and more companies—and one that may give a company a bit of an edge on its competition.

Five Things You Should Know About EDP

1. Selecting Equipment

The ability of a supplier to give you quick, effective service is considered a vital factor by companies participating in TEXTILE WORLD's data processing survey.

Amerotron's J. E. Sandlin says: "We looked for equipment that had the capacity to grow with the needs of the company without reprograming and changeovers. We also looked for a manufacturer who could furnish not only service on the machinery itself but could aid in programing it. Manufacturing experience in the computer field was the primary requisite."

Other considerations listed by managers were equipment capability, delivery date, cost, and compatibility with existing equipment.

2. Installation Costs

When you install a computer, you'll have to build an addition or partition off a corner of the mill to house new equipment and additional air conditioning to keep your computers cool. That's the consensus among respondents to TEXTILE WORLD's special survey. At one typical installation air conditioning alone came to $55,000. (The same company reports that it has cut 75% off its filter costs for this unit by proving that it's not necessary to run the unit 24 hours a day.)

Separate power lines are also a rule. You should count on them. Object: to prevent power fluctuations caused by other equipment on the same line. One company has found that it had to put in a voltage regulator to prevent gradual voltage fluctuations on weekends and at other times when over-all power requirements were subject to change.

Bright spot on the horizon: Recently developed solid-state computers use cool semi-conductor components instead of vacuum tubes. They don't require expensive air-conditioned environments or much power.

3. Employee Turnover

Turnover can be a problem in any area where competition for data processing people is keen. Might as well meet it head on, as American Thread Co. does. Located right in the heart of New York City, this company is meeting its problem by testing all new employees rigidly, re-classifying jobs, and boosting wage rates. Data processing employees are becoming convinced that they will do as well with American Thread as with anyone else in the New York area.

4. Service Bureaus

"Satisfactory, but quite expensive." That's the way most companies who've used these part-time computers sum up the assistance available from the data processing service bureaus now operating in every major city. Using service bureaus is often an interim measure. Or it's brought on by an isolated condition that can't profitably be handled on a company's regular equipment.

5. Network Systems

If your company has several or many plants, it's always important to take into account the geographical distribution. As a practical matter, it just isn't smart to try to install a small computer in each mill. Centralized processing is the only economical answer. But this immediately raises the problem of relaying information quickly wherever inventory control, production control, and payroll applications are involved.

You have a couple of choices in solving the problems. American Telephone & Telegraph Co. and various EDP equipment makers have machines (rental: about $200 a month) that can transmit punched card impulses over long-distance telephone lines. But transmission time is expensive where great distance is involved. This is a problem that equipment and communications specialists are trying to solve.

If your company has a trunk-line system, you can use it in off-shift hours to by-pass the expense of AT&T lines. Another means of transmission is the internal Teletype line.

SIX CASE HISTORIES: How EDP Is Working Today

1. Dan River Mills, Inc., Danville, Va., manufacturers of cotton dress goods, shirtings, sportswear, sheets, and pillow cases
Size: 16,000 employees
Markets: Industrial, domestics, apparel

A pioneer in EDP among the large textile firms, Dan River Mills' interest in the field dates back to 1945. This was the year its finished-goods inventory-control records were converted to a punched card system. Cotton inventory was the next operation to be changed over in 1946. Accounts payable followed in 1952, then accounts receivable (1953), budget control and property accounting (1954), and sales analysis (1957).

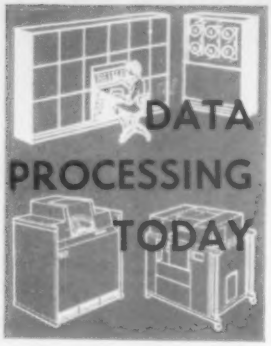
Starting in 1958 Dan River further mechanized some of these operations by converting to a medium-sized computer with tapes and data storage facilities. Installation costs, which included renovations and air conditioning expenses, came to $100,000. Inventory control and related cost work was the first job to be put on the computer.

Dan River's Charles M. Harris, assistant controller, explains that the inventory control approach was chosen because:

"1. For the most part this job was already on punched cards and the source documents were already available—there was little in the way of outside procedure to be set up and started.

"2. Sizable savings could be made by releasing conventional tab equipment.

"3. The need for faster reporting



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was greater here than in other areas."

Then in 1959, because of the work loads involved and the potential tangible savings, a major timekeeping operation (weave rooms) was converted from manual methods and a major portion of the payroll operation was converted from punched cards. During 1960, in addition to significantly cutting the running time on the computer by reprograming many jobs, Dan River transferred the property accounting operation to the computer. Several new jobs in the sales analysis and quality analysis fields were also added to the computer.

Significant results have been:

- **Cost reductions**—The estimated savings from the use of a computer have been realized.
- **Faster reporting**—Many reports are now delivered much earlier. For example, weekly reports on the order and inventory position are delivered on the first Monday following the close of the week on Saturday—10 days earlier than they used to be.
- **New information** — Weekly profit-and-loss statements and daily weavers' efficiency reports are just two examples of new information that could not be obtained with the old equipment.
- **Greater accuracy** — This has helped to win over some who were not originally sold on EDP.
- **Fewer reports**—Several lengthy reports have been eliminated. They have been replaced with reports that cite only exceptions to routine.

At present, Dan River's data processing operations staff consists of 59 people. Its electronics equipment consists of a medium-sized computer with 6 tape units, a data-storage unit, and an on-line printer. Its peripheral electric accounting equipment consists of 54 units, including 5 printers and 30 key punch and verifying machines. Annual base rental fee: $162,000.

Future plans for the computer call for continued efforts to improve and speed up the present programs, expanding the sales analysis area, adding supply control, and preliminary work to convert to a faster, more economical transistorized computer with tape units and a high-speed printer.

2. American Thread Co., New York City, manufacturers of threads and yarns.
Size: 5,000 employees
Markets: Industrial, Retail

Another of the leaders in the trend to EDP is American Thread Co. Its computer has been in operation since late 1959 (TEXTILE WORLD, March 1960).

Although it had used punched card equipment for sales analysis as far back as 1937, American Thread's move toward electronics did not really pick up momentum until 1957. That was the time the billing operation (then performed at the branches) was converted to a punched card system. Payroll work was put on punched cards in 1958. Next, accounts receivable went to this same technique. Soon after, all billing was centralized in the home office.

Meanwhile, beginning in 1958, American Thread studied its various clerical operations to find out which would best lend themselves to the new electronic techniques.

Beginning in the fall of 1959 the company began changing over those that it selected. Sales analysis and billing were chosen for changeover first, both because most of the groundwork was completed and because these areas represented the bulk of the work done on conventional equipment. Hence they offered substantial savings in machine rentals and labor.

Inventory control, budget control, and production control—all manual in the past—were scheduled to follow. Now, after a year of operation, the company's program has changed direction slightly. With ample programing personnel on hand, accounts receivable, payroll, and budget control have been pushed to the fore (ahead of inventory and production control and a recent addition—forecasting).

Key objective in the revised plans is greater integration—the ability to perform more jobs by means of a single program, plus better utilization of available machine time.

The company's equipment plans have changed, too. Right now it operates a medium-sized computer tape system without data-storage facilities. For the future, management plans a two-stage progression—first to the same system *with* a data storage unit, and then to a completely new system built around one of the recently developed solid-state computers. Management will save $100,000 in rentals with no sacrifice of processing objectives.

Currently equipment rentals are running at $250,000 a year.

A staff of 39 works in the company's New York data processing center. Included are 6 supervisors, 4 programers, 1 computer operator, 8 tab operators, 17 card punch operators, 2 clerks, and 1 tape librarian. In addition to its New York operation, the company has 7 small regional installations, all supervised locally.

Much still remains to be done at American Thread. But Data Processing Manager George W. Leopold believes the installation ultimately "will cost out"—will be paid for out of machine and labor savings, with the payoff coming in the intangibles: Faster, more accurate reports and better customer service.

Originally, the company figured on a 5-year plan before fully achieving these objectives. Now, with its stepped-up program, it sees a 3-year operation, with completion slated for 1962.

3. Chicopee Mfg. Corp., New Brunswick, N. J., manufacturers of woven and nonwoven textiles.
Size: 4,100 employees
Market: Industrial

The need for more timely, more accurate inventory and production reports prompted this firm's advance into data processing.

As Assistant Controller John Dods puts it, "It did not seem feasible using conventional tab

equipment to do the volume of work we had to do in the time we had to do it."

Starting November 1, 1960, Chicopee began using a medium-sized computer with tape and data-storage facilities to process inventory control, production control, and sales forecasting data in one of its five divisions. The company considers these functions closely interrelated. So it developed one integrated system for all three.

Next will come sales analysis, and then cost accounting for the same division. Both are now on punched cards. Ultimately, accounts receivable (now done mechanically) will probably follow, but as yet has not been scheduled.

Not yet slated for change are billing (electric typewriter), accounts payable (punched cards), and budget control (manual).

"We decided to start with inventory and production control because we felt potential savings through improved service and reduced inventory were greatest in this area," Mr. Dods explains.

A small computer with greater storage capacity was considered first, then dropped in favor of sharing the medium-sized unit already used by Chicopee's parent company, Johnson & Johnson. Both are located in New Brunswick, N. J. The consolidation should effect an overall corporate saving on machinery rentals.

4. Chatham Mfg. Co., Elkin, N. C., manufacturer of blankets, wearing apparel, upholstery, and sales yarn.
Size: 3,500 employees
Markets: Retail, Industrial

Another pioneer in EDP, Chatham now performs all its major clerical operations on a small computer equipped with data-storage facilities.

The operation, according to James H. Dornburg, director of market research, has opened the door to "the most modern of management techniques" and has been "gratifyingly successful."

Equipment rental costs have been matched by savings in labor (staff now 32, formerly 57), permitting the company to reap important intangible benefits in faster, more accurate reporting and management-by-exception administrative techniques.

Chatham started on the road to EDP back in mid-1956. Steady company growth had rendered manual clerical system obsolete and expensive. The company decided to convert sales analysis, production control, inventory control, billing, and accounts receivable to a punched card system of accounting. These went over so well that accounts payable was added. Next came the further conversion of these operations into integrated programs suitable for running through an electronic computer system. Still further modifications are bringing greater speed and more capacity to this installation.

Sales analysis at Chatham begins with the original order sent to the home office from the field selling force. Data from such orders is suitably coded and passed to data processing for conversion to punched cards. These cards are systematically fed into the computer to update records covering styles, customers, salesmen, and brands. Accumulated output is printed on specially designed forms that accommodate data by territory, style, brand, and customer.

5. Bruck Mills Ltd., Montreal, Quebec, throwsters, weavers, printers, and finishers of man-made-fiber materials.
Size: 1,600 employees
Market: Industrial

Increased sales volume has put a strain on manual clerical methods employed by Bruck Mills. As a result, the company today plans to convert several of these to electric accounting-machine techniques.

Areas selected for conversion are sales analysis, sales forecasting, and inventory control.

John J. MacNeill, of Bruck's controller's staff, reports that following the change "We expect to be able to issue more accurate statistical reports more often and faster than with our present system."

Some operations will remain unchanged, at least for the foreseeable future. Accounts receivable will remain on mechanical accounting machines. Billing will continue to run on mechanical duplicating equipment, although Bruck is considering centralization by means of Teletype circuits.

Proposed rental: $15,000. Staff: Six to seven employees.

6. Dominion Textile Co. Ltd. in Montreal, Quebec, manufacturers of gray and converted cloth, yarns, netting and tire cord, blankets, sheets, and towels.
Size: 9,000 employees
Market: Industrial, Domestics

An electronics study department has been set up by this firm to determine to what extent it would profit from a computer installation. Already equipped with electric accounting machines for payroll and sales analysis work, the company thinks there may be enough savings potential in the payroll area to warrant more complex equipment.

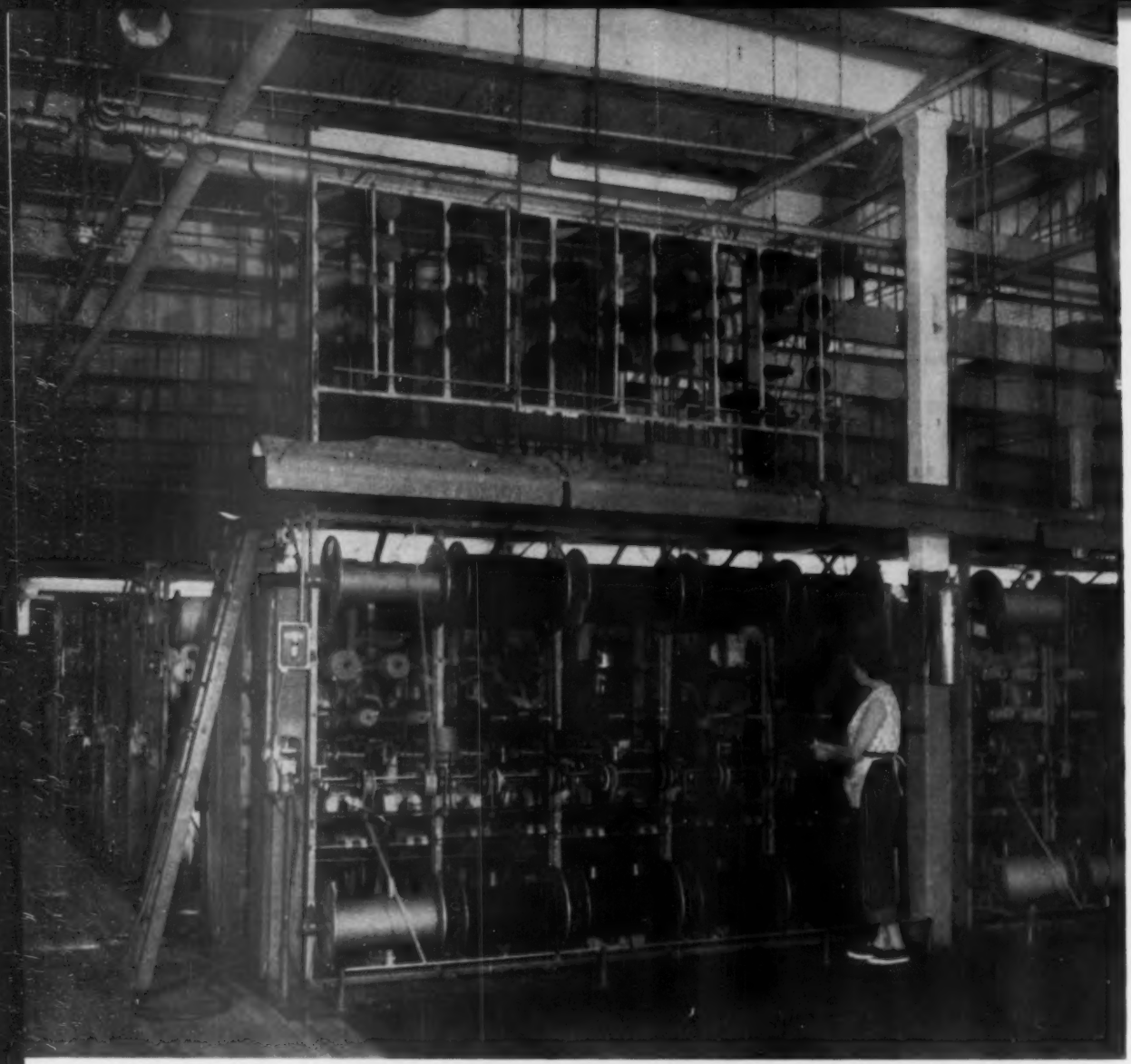
J. F. Marshall, manager of the study department, says this application was singled out because "it required a large clerical force to perform the daily calculation of the incentive bonus." In addition, the calculating methods used involved "a substantial repetition of procedures." Rapid communication of daily payroll input data from outside locations to the data processing center and the subsequent return of calculated results have presented a problem as yet unsolved.

Since launching the study, however, Dominion has found that supply inventory control presents an even more attractive prospect from the standpoint of immediate return.

The company already has some computer experience via its cost-of-sales reports. These reports are run on a medium-sized computer at a data processing service bureau. They do not represent enough work to justify having a computer solely for this purpose. The company holds costs down by using its own employees to run the reports.

As for billing, accounts receivable, and accounts payable, these are all handled on mechanical equipment with no change contemplated at present. Neither is a change planned for production control and budget control.

The company is hopeful its staff with a computer will not increase substantially over its present 29.



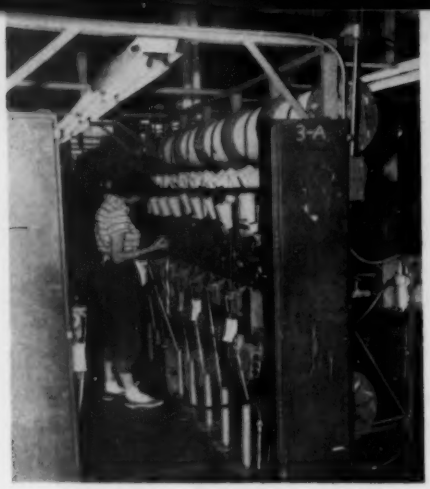
PRODUCING: Needle looms are installed in groups. Zipper-tape looms have 10 units. Filling yarn comes from overhead creel and is pigtail creeled from the catwalk. Warp beams hold 34 to 50 ends in rope form.

Weaving Narrow Fabrics at

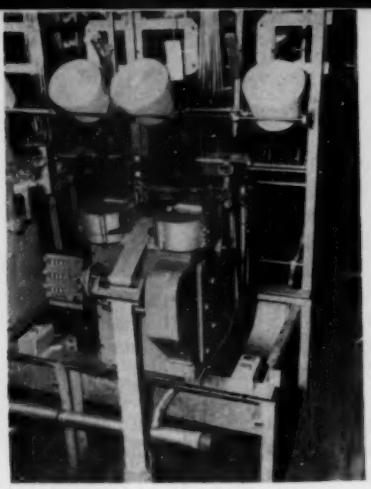
When one of your looms conks out, how'd you like to replace it with a spare in less than 15 minutes? That's what this mill does on narrow-fabric looms to insure speedy, quality production.

WEAVING narrow fabrics at 2,000 picks per minute. Producing 12- to 15-million yards of fabrics every month. That's what 420 needle looms are doing today at Bridgeport Fabrics, Inc., Davidson, N. C. (photo above).

Bridgeport concentrates its entire production on only three fabrics: zipper, automotive, and furniture tape. Quick delivery is its strongest point. You'd have to see the woven fabric moving away from



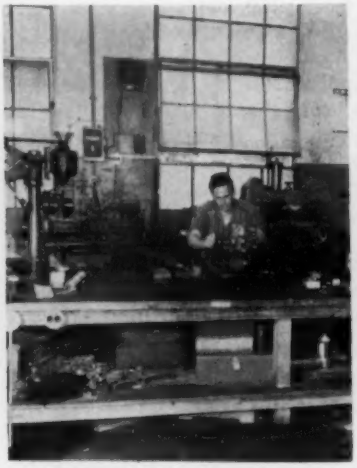
TENDING: Loom operator tends 80 narrow looms (zipper tape) and 40 wide looms (auto and furniture fabrics). On this loom, filling creel is just over weaving unit. These cones weigh 3 pounds.



WEAVING: Two needles, six harnesses, start-stop pushbutton, and take-up rolls are distinguishing points of high-speed equipment. Production is determined by pick counters.

HANDLING: Gravity pulls woven fabric through tubing to the floor below. Here, operator adds silicone softener emulsion to protect monofilament plastic yarn against abrasion at high loom speed.

WARPING: Speed is 350 to 400 yards per minute. Beam 20 inches wide and 16 inches in diameter holds 18,000 yards of cotton yarn as a rope warp. Racks hold both empty and full beams.



MAINTENANCE: Loom units are repaired in this shop near the looms. Two men on the first shift recondition units as they're removed from looms. All parts are interchangeable.

INSPECTING (AND SPLICING): Zipper tape is handled six tapes at a time at 4 yards per minute. Three girls inspect 18 tapes at once and package them in the same operation.

2,000 Picks Per Minute

the loom to visualize just how rapidly the looms produce. Furniture fabric, for example, weaves at 2 yards per minute.

Plant Superintendent Vincent S. Figaro expresses Bridgeport's success like this: "Loom versatility lets us give customers quick service. Each loom is an individual unit, and therefore we don't have to shut down the complete loom to make style changes. We can quickly set up four or five looms, as individual units, and ship 4,000 to 5,000 yards of cloth overnight.

"With our high-speed operation, we're producing at about five times the industry average. We really load up our supply packages—go for volume, big warp beams, continuous filling packages.

"With our precision loom parts, we're able to standardize. Parts are interchangeable—bearings, castings, gears all work in any loom. And assembly is quick and easy.

FAST FIX—OR OUT

"Loomfixers are out—they're setup men. Weavers are not weavers—they're operators. We keep extra looms ready for instant use. When a loom knocks out, a new loom is put in its place. Way to tell if a new loom is needed? If the setup man estimates it will take longer than 15 to 20 minutes to repair, it's out."

When Figaro came to Davidson

in September, 1955, to start the mill, he'd never worked in a mill before. He was a tool and die maker. And this training has served him well at Bridgeport.

The first looms at Davidson had never been tested in production. The mill building is an abandoned, two-story yarn mill. This structure is ideal for Bridgeport's production layout. Looms are on the second floor, and fabric drops through the floor into boxes on the first floor as it's woven.

Many employees came from the old yarn mill. And as Figaro and the employees learned together, more looms were added to reach the 420 in place today.

FAST WEAVING

Looms are Libby shuttleless in two models: (1) Model-C that weaves fabrics up to 3 inches wide at 1,000 to 1,200 ppm. and (2) Model-D that weaves fabrics ¾ inch wide at 2,000 ppm.

The wider looms are used for automotive and furniture fabrics, and the narrow are for zipper tapes. Auto fabrics are 1½ to 2¾ inches wide, furniture fabrics are 2 to 2¾ inches, and zipper tape is ⅜ to $\frac{9}{16}$ of an inch.

For outdoor lawn furniture, Bridgeport uses monofilament fibers such as polypropylene, and polyethylene, and saran in a wide variety of colors. Zipper tapes are yarn-dyed cotton.

There's one big problem in running these fibers side by side: If the air is dry enough for the plastic yarns to run well, it's too dry to run cotton yarn. Needles' whipping back and forth at 1,200 ppm. can be sudden death to the monofilament yarn.

So a silicon softener emulsion (Sly-soft 14, Dow Corning Corp.) is used to keep the monofilament yarns from fraying by easing the severe abrasive action caused by the almost right-angle pick while the yarn is under tension. Most critical area is the chain stitch along the edge of the fabric.

Filling-yarn cones are soaked with the emulsion before they're placed on the loom. The lubricant is simply poured over five or six cones on a rack, which is over a drip bucket that catches excess lubricant for later use.

The lubricant is also applied at intervals to the cones on the looms by a squeeze bottle. Figaro says he can walk down a loom alley and tell by the heat and humidity of the room just how much lubricant will be needed each day.

Loom improvements are a continuous cycle. Latest attachment is an overhead creel for cones of filling yarn. Operator creels yarn from a catwalk. Cones here, as on all looms, are pigtail creeled so that looms never stop for filling. If this overhead-creel experiment works out, creel hands will do all creeling to give weavers better work assignments. But jobloads are already efficient: 80 looms for zipper tapes and 40 looms for wider fabrics.

Another development that's being applied steadily (loom by loom) is a centralized lubrication system (Alemite). Looms used to be oiled by hand every 24 hours. Now oiling is completely automatic with a valve at every unit.

Newer and larger warp beams are increasing the yardage on warp beams. Newest beam, 20 inches wide and 16 inches in diameter, holds 18,000 yards of warp.

HANDLING THE GOODS

All fabric weaves through tubing to the inspecting and shipping department on the floor below. Fabric is inspected on this lower floor. Before this step, it's constantly inspected by patrolling weavers.

Woven fabric drops into boxes. By pigtailing the fabric into two or more boxes, fabric can be woven any desired length.

To aid weavers in quality inspection, there's a warp stop motion, filling stop motion, and a Micro Switch to stop the loom if the fabric wraps up at take-up rolls.

Motions of weaving units are somewhat similar to broad looms except for shuttleless parts. Units for zipper tape, for example, are mounted in an over-all framework in groups of 10. And each unit can be removed in a couple of minutes.

Cams to actuate the six harnesses are enclosed in a case where they receive constant lubrication. Warp ends go through comb sections similar to regular loom reeds to straighten ends from their rope form. Loom let-off is the drum-and-shoe type.

REPLACING LOOMS

Looms are always in excellent mechanical condition. Set-up men spend most of their time with minor adjustments such as setting warp and filling tension to specific weaving conditions. If there's a major job, the unit is removed and a spare is set in.

Then shop men completely disassemble the unit, clean and oil it, and replace worn parts.

Set-up men each have 100 units to tend. But they aren't ironbound to these looms. If one group of looms isn't running well, all set-up men pitch in to correct the trouble.

Production standard is 97% and first-quality fabric standard is also 97%. If production drops below 90%, Figaro moves in to find the trouble.

Warps at the loom are replaced by hand twisting, which requires 7 to 10 minutes. Weavers normally creel the filling.

Warpers are just a short distance from looms with stored warps in racks between warpers and looms. Bridgeport designed its own warpers, and all warps are made in rope form. Yarn comes from creels. Zipper tape comes from 3-lb packages, and warps have 34 to 50 ends. Furniture fabric averages 80 ends.

Warper speed is 350 to 400 yards per minute, and warp length is predetermined by a Veeder-Root counter. Fabric is doffed from the loom and is left in the container it dropped into from the loom. Then it is calendered.

Finally, it is inspected again and packed. A final inspector inspects six pieces of fabric at a time as it runs over a machine. On zipper tape, she makes a splice that will run through the customer's machine to insert zippers.

Auto tape is given a final fabrication at Bridgeport to form it into wind-lacing (door moldings). This job is done by stitching sponge rubber into the tape with a sewing machine. Operation is automatic at 4 yards per minute.

Here, for the first time anywhere, you'll find a brand-new, easy-to-use conversion table. It was prepared especially for TEXTILE WORLD. It will remove one barrier (hard-to-do conversion of other numbers to Tex numbers) to wider use of this universal numbering system.

New Look for Tex System—Quick, Easy, More Useful

THE TABLES on the next two pages are brand new. They will convert yarn numbers of four of the most familiar systems (eight or more systems are in use today) to Tex numbers—a universal numbering system introduced into the United States some three years ago.

Because of these conversion tables you'll probably be seeing more and more Tex numbers. Why? Because, up to now, lack of such simple and comprehensive tables as these has been a barrier to the spread of the Tex system. These new tables make conversion quick and easy. You need not be a whiz at math. You need no special skills. You just read across the tables and select the rounded Tex number nearest the yarn number you want to convert.

But more about the tables—and how to use them—on the next two pages. For the moment, suppose you're not familiar with the Tex system. Suppose you're wondering whether it's really useful—or just another system designed to confound you. If these questions bother you, here are your answers:

Simply stated, the Tex system is a direct yarn-numbering system that is based on grams per kilometer (1,000 meters) of any sort of textile fiber or strand. This number often is referred to as "count," "size," "fineness," or "linear density."

But the number actually is the direct relationship between weight and length of a yarn or strand. It is similar to the denier system, differing in that the unit of length is 1,000 meters instead of 9,000 meters. The use of the metric (denier) system in textiles in the United States is comparatively new. There are those who argue that because raw materials are bought in terms of pounds, and fabrics are sold in terms of yards, a single system based on metric units would be confusing. They overlook the fact that billions of pounds of man-made

By B. L. WHITTIER, Professor
Department of Textile Technology
North Carolina State College
Raleigh, N. C.

How Tex Has Grown

A plan for the orderly introduction of Tex, a single system of numbering yarns made from all types of fibers, was jointly proposed in the spring of 1960 by Committee D-13 of the American Society for Testing Materials and by Committee L-23 of the American Standards Association.

Outline of this plan and a series of rounded-number conversion tables were published in the ASTM Bulletin, and over 4,000 reprints have been distributed to the textile industry through technical societies and trade associations that approve the plan. These tables, while adequate for an introduction to Tex, are somewhat limited in scope.

Original impetus of interest was sparked by the technical committee on textiles of the International Organization for Standardization (IOS), which recommended at a recent meeting in England that the system be universally adopted. Delegates from 21 nations, including the United States, joined in unanimous approval of Tex.

In view of this interest, TEXTILE WORLD proposes to insert Tex number (in parentheses) where appropriate in its regular issues in the future if sufficient interest is aroused. Conversion tables especially prepared for TEXTILE WORLD by Professor Whittier, author of the accompanying article, are available as reprints. Price: 35¢ per copy. Quantity prices on request.
—*Editor.*

TABLE 1

How Tex Numbers Compare With Yarn Numbers by Other Systems

Tex	Woolen (Run)	Typp	Cotton	Worsted	Metric	Woolen, Linen (Cut)	Asbestos, Glass (Cut)	Denier	Yards per Pound
1	310	496	590	886	1,000	1,653	4,961	9	496,055
20	15.5	24.8	29.5	44.3	50.0	82.7	248	180	24,803
40	7.8	12.4	14.8	22.1	25.0	41.4	124	360	12,401
80	3.9	6.2	7.4	11.1	12.5	20.7	62	720	6,201
100	3.1	5.0	5.9	8.9	10.0	16.5	50	900	4,961

TABLE 2

How Yarn Numbers Convert to 1 to 100 Tex

Tex	Denier	Cotton	Worsted	Woolen	Yards per Pound	Tex	Denier	Cotton	Worsted	Woolen	Yards per Pound
1	9	590.54	885.81	310.03	496,055	51	459	11.6	17.4	6.1	9,727
2	18	295.3	442.9	155.0	248,028	52	468	11.4	17.1	6.0	9,540
3	27	196.8	295.3	103.3	165,352	53	477	11.2	16.8	5.9	9,360
4	36	147.6	221.5	77.5	124,014	54	486	10.9	16.4	5.7	9,186
5	45	118.1	177.2	62.0	99,211	55	495	10.7	16.1	5.6	9,019
6	54	98.4	147.6	51.7	82,676	56	504	10.5	15.8	5.5	8,858
7	63	84.3	126.5	44.4	70,865	57	513	10.4	15.6	5.5	8,703
8	72	73.8	110.7	38.7	62,007	58	522	10.2	15.3	5.4	8,553
9	81	65.6	98.4	34.4	55,117	59	531	10.0	15.0	5.2	8,408
10	90	59.1	88.6	31.0	49,606	60	540	9.8	14.8	5.1	8,268
11	99	53.6	80.5	28.1	45,096	61	549	9.7	14.5	5.1	8,132
12	108	49.2	73.8	25.8	41,338	62	558	9.5	14.2	5.0	8,001
13	117	45.4	68.1	23.6	38,158	63	567	9.4	14.0	4.9	7,874
14	126	42.2	63.3	22.1	35,433	64	576	9.2	13.8	4.8	7,751
15	135	39.4	59.1	20.7	33,070	65	585	9.1	13.6	4.8	7,632
16	144	36.9	55.4	19.4	31,003	66	594	8.9	13.4	4.7	7,516
17	153	34.7	52.0	18.2	29,180	67	603	8.8	13.2	4.6	7,404
18	162	32.8	49.4	17.2	27,559	68	612	8.7	13.0	4.6	7,295
19	171	31.1	46.7	16.3	26,108	69	621	8.6	12.8	4.5	7,189
20	180	29.5	44.3	15.5	24,803	70	630	8.4	12.6	4.4	7,087
21	189	28.1	42.1	14.7	23,622	71	639	8.3	12.5	4.4	6,987
22	198	26.8	40.2	14.5	22,548	72	648	8.2	12.3	4.3	6,890
23	207	25.7	38.5	13.5	21,568	73	657	8.1	12.2	4.2	6,795
24	216	24.6	36.9	12.9	20,669	74	666	8.0	12.0	4.2	6,703
25	225	23.6	35.4	12.4	19,842	75	675	7.9	11.9	4.1	6,614
26	234	22.7	34.1	11.9	19,079	76	684	7.8	11.7	4.1	6,527
27	243	21.8	32.7	11.5	18,372	77	693	7.7	11.6	4.0	6,442
28	252	21.1	31.6	11.1	17,716	78	702	7.6	11.4	4.0	6,360
29	261	20.4	30.6	10.7	17,105	79	711	7.5	11.3	3.9	6,279
30	270	19.7	29.6	10.3	16,535	80	720	7.4	11.1	3.9	6,201
31	279	19.0	28.5	10.0	16,002	81	729	7.3	10.9	3.8	6,124
32	288	18.4	27.6	9.7	15,502	82	738	7.2	10.8	3.8	6,049
33	297	17.9	26.9	9.4	15,032	83	747	7.1	10.6	3.7	5,977
34	306	17.4	26.1	9.1	14,590	84	756	7.0	10.5	3.7	5,905
35	315	16.9	25.4	8.9	14,173	85	765	6.9	10.4	3.6	5,836
36	324	16.4	24.6	8.6	13,779	86	774	6.9	10.3	3.6	5,768
37	333	15.9	23.9	8.3	13,407	87	783	6.8	10.2	3.6	5,702
38	342	15.5	23.3	8.1	13,054	88	792	6.7	10.1	3.5	5,637
39	351	15.1	22.7	7.9	12,719	89	801	6.6	9.9	3.5	5,574
40	360	14.8	22.1	7.8	12,401	90	810	6.6	9.8	3.4	5,512
41	369	14.4	21.6	7.6	12,099	91	819	6.5	9.7	3.4	5,451
42	378	14.1	21.2	7.4	11,811	92	828	6.4	9.6	3.4	5,392
43	387	13.7	20.6	7.2	11,536	93	837	6.4	9.5	3.3	5,334
44	396	13.4	20.1	7.0	11,274	94	846	6.3	9.4	3.3	5,277
45	405	13.1	19.6	6.9	11,023	95	855	6.2	9.3	3.3	5,222
46	414	12.8	19.2	6.7	10,784	96	864	6.2	9.2	3.2	5,167
47	423	12.6	18.9	6.6	10,554	97	873	6.1	9.1	3.2	5,114
48	432	12.3	18.5	6.5	10,334	98	882	6.0	9.0	3.2	5,062
49	441	12.1	18.1	6.3	10,124	99	891	6.0	9.0	3.1	5,011
50	450	11.8	17.7	6.2	9,921	100	900	5.9	8.9	3.1	4,961

fibers and filament, described in terms of denier number, have been processed into fabrics with the weight expressed in terms of ounces per yard and that this cloth is sold with prices based on one yard of material. This fact alone should remove any real objection to the Tex system.

You don't have much cause for fear of misunderstanding or confusion or complication if the Tex system should be adopted for fibers, filaments, sliver, roving, yarns, and cords. Conversely, you would find some outstanding advantages and probably many small benefits that would add up to sizable gains. The most obvious advantage to the industry as a whole is the common-denominator aspect. This would affect many companies that run several different types of fibers and yarns (or both) in their plant and are now using two or more numbering systems that have to be converted. Introduction of a universal system should be of great interest to people running such plants. And once they're convinced that Tex would be the only system rather than an additional one, it is reasonable to assume that they would enthusiastically cooperate in every move toward its adoption.

Among forward-looking textile men, there's wide approval of the idea of a single universal system. And there's agreement that the Tex system has more advantages than any other system previously suggested. The stumbling block that impedes adoption in the United States is the difficulty in effecting a simultaneous change by all segments of the industry. A better understanding of the Tex system can help remove this stumbling block.

The tables accompanying this article will help to familiarize you and other industry people with the Tex system by listing the equivalent numbers for a wide range of whole Tex units. Table 1, for instance, shows a few examples that demonstrate the range of yarn numbers in all systems and the yards per pound for Tex units. The first line in this table shows the yarn number in each system that is equivalent to 1 Tex number, which has a linear density of 1 gram per 1,000 meters—496,050 yards per pound.

Table 2 lists the yarn numbers of the denier, (English) cotton, (English) worsted, and (American) woolen run systems that correspond with each Tex number from 1 to 100. It also shows that most of the commercial cotton, rayon, nylon, worsted, and woolen yarns are within the range of 1 to 100 Tex.

Table 3, which lists selected Tex numbers from 105 to 1,000, illustrates how the Tex system is adaptable to the heavier yarns and rovings without getting into astronomical figures. The table is inclusive enough to meet most practical needs for conversion.

. . . *Turn the page*

TABLE 3

How Yarn Numbers Convert to 105 to 1,000 Tex

Tex	Denier	Cotton	Worsted	Woolen	Yards per Pound
105	945	5.62	8.42	2.95	4,724
110	990	5.37	8.05	2.81	4,510
115	1,035	5.14	7.70	2.70	4,314
120	1,080	4.92	7.38	2.58	4,134
125	1,125	4.73	7.10	2.48	3,968
130	1,170	4.54	6.81	2.36	3,816
135	1,215	4.37	6.55	2.30	3,674
140	1,260	4.22	6.33	2.21	3,543
145	1,305	4.07	6.10	2.14	3,421
150	1,350	3.94	5.91	2.07	3,307
155	1,395	3.81	5.72	2.00	3,200
160	1,440	3.69	5.54	1.94	3,100
165	1,485	3.58	5.38	1.88	3,006
170	1,530	3.48	5.22	1.82	2,918
175	1,575	3.38	5.06	1.77	2,835
180	1,620	3.28	4.94	1.72	2,756
185	1,665	3.19	4.78	1.68	2,681
190	1,710	3.11	4.67	1.63	2,611
195	1,755	3.03	4.55	1.59	2,544
200	1,800	2.95	4.43	1.55	2,480
210	1,890	2.81	4.21	1.47	2,362
220	1,980	2.68	4.02	1.41	2,255
230	2,070	2.57	3.85	1.35	2,157
240	2,160	2.46	3.69	1.29	2,067
250	2,250	2.36	3.54	1.24	1,984
260	2,340	2.227	3.41	1.19	1,908
270	2,430	2.18	3.27	1.15	1,837
280	2,520	2.11	3.16	1.11	1,772
290	2,610	2.04	3.06	1.07	1,711
300	2,700	1.97	2.96	1.03	1,654
310	2,790	1.90	2.85	1.00	1,600
320	2,880	1.84	2.76	0.97	1,500
330	2,970	1.79	2.69	0.94	1,503
340	3,060	1.74	2.61	0.91	1,459
350	3,150	1.69	2.54	0.89	1,417
360	3,240	1.64	2.46	0.86	1,378
370	3,330	1.59	2.39	0.83	1,341
380	3,420	1.55	2.33	0.81	1,305
390	3,510	1.51	2.27	0.79	1,272
400	3,600	1.48	2.22	0.78	1,240
425	3,825	1.39	2.08	0.73	1,167
450	4,050	1.31	1.96	0.69	1,102
475	4,275	1.24	1.86	0.65	1,044
500	4,500	1.18	1.77	0.62	992
525	4,725	1.12	1.68	0.59	945
550	4,950	1.07	1.60	0.56	902
575	5,175	1.03	1.54	0.54	863
600	5,400	0.98	1.47	0.52	827
625	5,625	0.94	1.41	0.50	794
650	5,850	0.91	1.36	0.48	763
675	6,075	0.88	1.32	0.46	735
700	6,300	0.84	1.26	0.44	709
725	6,525	0.81	1.21	0.43	684
750	6,750	0.79	1.18	0.41	661
775	6,975	0.76	1.14	0.40	640
800	7,200	0.74	1.11	0.39	620
850	7,650	0.69	1.03	0.36	584
900	8,100	0.66	0.99	0.34	551
950	8,550	0.62	0.93	0.33	522
1,000	9,000	0.59	0.89	0.31	496

. . . *Begins on page* 51

How to Convert to Tex Numbers

You can convert all indirectly numbering systems to Tex by dividing the weight-length ratio (conversion factor) by the yarn number. You convert direct systems (Denier and Spyndle) to Tex either by dividing the yarn number by its conversion factor or by multiplying the yarn number by another factor.

Here are the formulas you use with the indirect systems:

$$\text{Tex number} = \frac{\text{Conversion factor}}{\text{Equivalent number}}$$

or

$$\text{Equivalent number} = \frac{\text{Conversion factor}}{\text{Tex number}}$$

The American Society for Testing Materials (ASTM) recommends these formulas and conversion factors as follows:

Indirect Systems

$$\text{Tex} = \frac{310.034}{\text{Woolen yarn number}}$$

$$\text{Tex} = \frac{590.541}{\text{Cotton hank number}}$$

$$\text{Tex} = \frac{885.812}{\text{Worsted hank number}}$$

$$\text{Tex} = \frac{1{,}000.00}{\text{Metric number}}$$

$$\text{Tex} = \frac{1{,}653.52}{\text{Linen lea, Woolen cut}}$$

$$\text{Tex} = \frac{4{,}960.55}{\text{Glass fiber, Asbestos cut}}$$

Direct Systems

$$\text{Tex} = \frac{\text{Denier}}{9} \text{ or } 0.111111 \times \text{Denier}$$

$$\text{Tex} = \frac{\text{Spyndle number}}{0.02903} \text{ or } 34.4482 \times \text{Spyndle number}$$

Except for equivalent denier numbers, some liberty has been taken in calculations to make the tables easier to read. If you need a more exact number for any Tex value, divide the Tex number into the corresponding equivalents for 1 Tex. To find 20 Tex:

Cotton system: 590.541 ÷ 20 = 29.5271 instead of 29.5

Worsted system: 885.812 ÷ 20 = 44.2903 instead of 44.3

Woolen system: 310.034 ÷ 20 = 15.5017 instead of 15.5

Yards per pound: 496,055 ÷ 20 = 24,802.75 instead of 24,803

To clarify further, 1 Tex weighs one gram per 1,000 meters (496,055 yards per pound). The equivalent number in an indirect system would be the one that designates a yarn having this same relationship. For instance, 590.54 hanks of 840 yards each virtually equal 496,055 yards per pound. This means that a 590.54/1 cotton-system yarn is equivalent to 1 Tex since both weigh 1 gram per 1,000 meters or 1 pound per 496,054 (approximate) yards.

Using the same comparison, 2 Tex weighs twice as much as 1 Tex, or 2 gram per 1,000 meters, and this is equal to one-half the yards per pound and one-half the cotton yarn number.

Rounded Tex numbers are recommended by ASTM during the early stage of changing over to the Tex system, Tex numbers should be shown for informative reasons only. The rounded number serve this purpose.

If You Want To Go All Out For Tex—

You're not limited to the number shown in Table 2. Tex numbers can be used in the conventional progression of manufacture from sliver through spun yarn. Take 20/1 carded cotton for example. Here's what your Tex numbers would look like:

Drawing sliver:	4,250 Tex (60 grains)
Roving:	394 Tex (1.50 hk. roving)
Yarn:	29.5 Tex (20/1)

Another advantage is that drafts can be simply calculated where one system is used throughout. Taking 20/1 carded cotton yarn again, you simply divide the smaller strand into the larger like this:

$$\text{Sliver to roving: } \frac{4{,}250}{394} = 10.80 \text{ draft}$$

$$\text{Roving to yarn: } \frac{394}{29.5} = 13.35 \text{ draft}$$

For double-creeled yarn, you would multiply the roving size by two:

$$\text{Roving to yarn: } \frac{394 \times 2}{29.5} = 26.70 \text{ draft}$$

The system can be used for card sliver if desired. Assuming that drawing is six ends up and you have a 55-grain (3,900 Tex) card sliver, simply multiply 3,900 x 6 = 23,400 Tex.

Suggestions have been made to use the Tex system for lap weights. But it probably would be better for a mill wishing to experiment with this system to continue present practices through the production of the lap and after the fabric is woven—but adopt the Tex system for everything else. It would work out as follows:

1. Designate the weight of picker laps in ounces per yard.
2. Use Tex units for sliver, roving, and yarn.
3. Designate the weight of fabrics in ounces per yard or ounces per pound.

This would mean a change in systems when a flat sheet of fibers was converted into strand form and a change back when the strands were converted to a flat sheet in the form of a fabric. In between, there would be one system—with elimination of the confusing use of grains per yard and hanks per pound.

Actually such a system for using Tex units has been used in Europe for a number of years. Mills in the United States probably would profit by putting in one direct yarn-numbering system right now, even if they had to convert the yarn number after spinning, as the European spinning plants have been doing for some time.

Today, It's No-Hands Doffing —U.S. Style

TODAY a U. S.-made automatic doffer (photos) is in full-scale commercial operation at Drayton Mills, Spartanburg, S. C. The new machine is a breakthrough for U. S. textile machinery designers—and the climax of two years of experimental and pilot operation by engineers of Deering Milliken Research Corp. and Drayton Mills.

The unit is installed over 24 frames spinning 40s yarn. The doff cycle for each frame is about 10½ hours. On this cycle and on its 6-day, 3-shift schedule, the machine handles 8 to 12 frames per hour and about 100,000 bobbins per week. Theoretical capacity: 72 frames; 300,000 bobbins per week.

Besides speed and labor savings the new machine offers the following:

- Fewer ends down (average of 11 per doff).
- Reduced spindle plumbing.
- Less yarn waste.
- Fewer short doffs.
- Higher efficiency (average downtime for doffing is only 2 minutes).

Here's how the unit works:

Ten minutes before a spinning frame is ready to doff, a yardage counter on the frame actuates a switchgear that moves the doffer into position over the frame. The operator pulls down a retractable control panel. He pushes certain buttons, thus causes the doffer to descend over the full bobbins.

Rubber sleeves grasp all 288 bobbins at one time. (Sleeves are forced against the bobbin by air introduced between the sleeve and its cylindrical metal support.) Then the full bobbins are lifted out of the way and a separate rack carrying empty bobbins descends over the spindles and seats the empties.

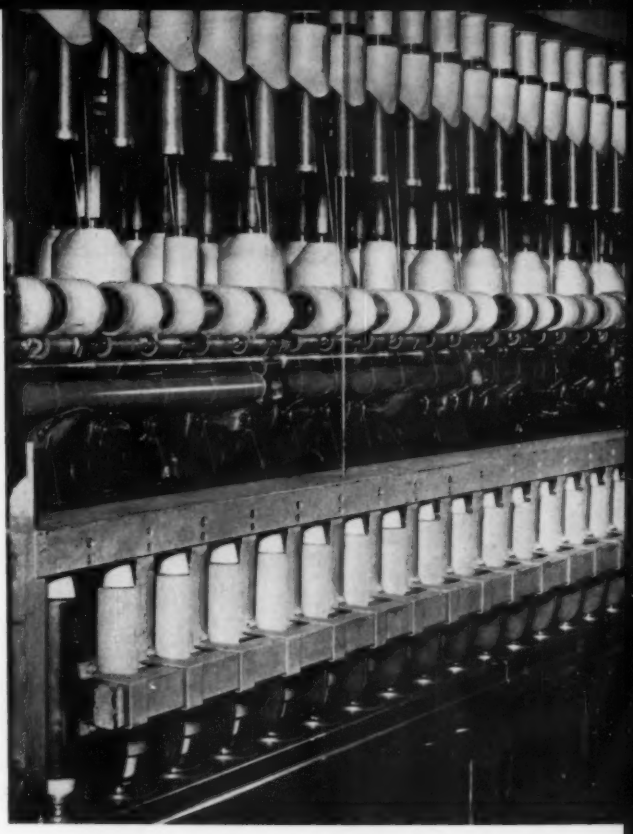
The bobbin rack is withdrawn. The doffer goes to the end of the bay (loading and unloading platform), where it discharges the full bobbins onto a pegged belt. Then it picks up a fresh load of empty bobbins from another belt—and is ready to go again.

The loading and unloading station is a vital part of the operation. Aisles are free of bobbin trucks. Conveyor belts eliminate manual yarn handling.

The doffer was conceived in its entirety by Deering Milliken engineers, and the major portions of the machine were built by company personnel.

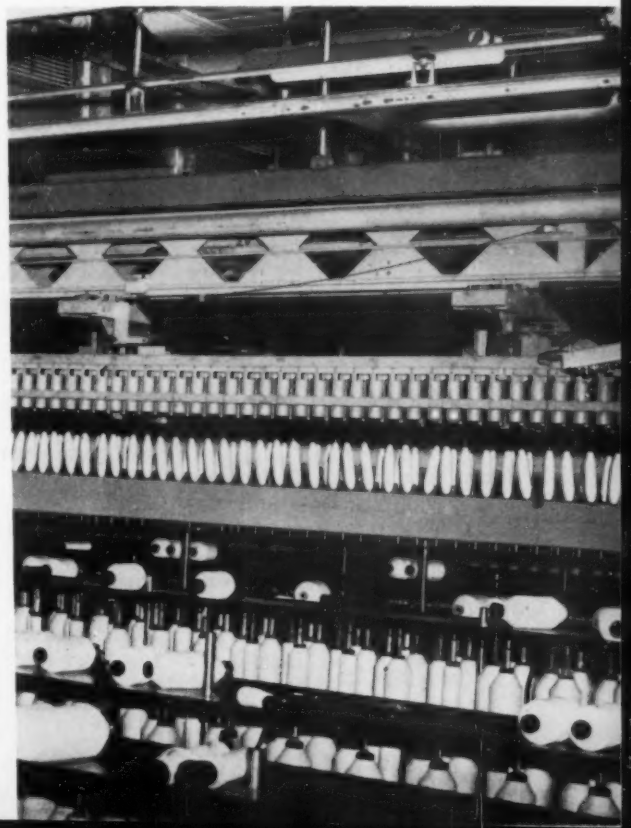
Specially adapted cleaning equipment is mounted on the overhead conveyor. It is kept in constant motion between doffs to keep the area free of lint.

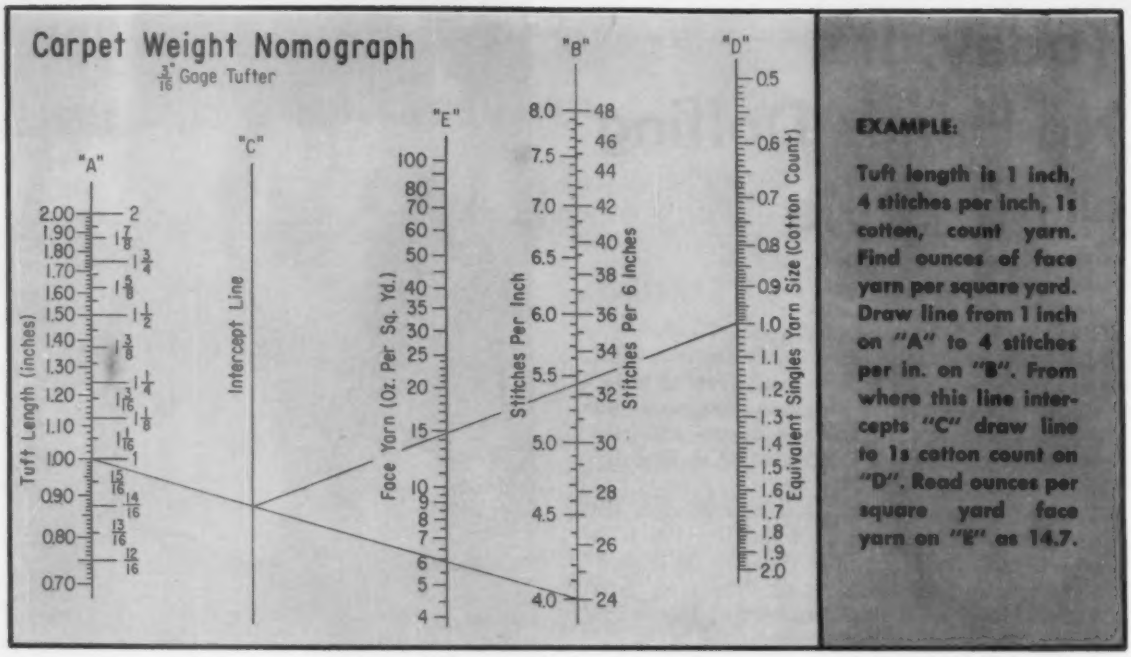
Deering Milliken Research Corp. (as patent holder) plans to license one U. S. and three foreign manufacturers to build the doffer.



DOFFING begins as graspers move in over full bobbins. Frame gets doffed in one operation. Empty bobbins (top) will be positioned when full bobbins are removed.

LOADING station (theoretical capacity, 100,000 bobbins per day) handles full and empty bobbins by belts. Doffer deposits full bobbins, picks up empty ones.




Carpet Weight Nomograph
3/16" Gage Tufter
"A"
"C"
"E"
"B"
"D"
Tuft Length (inches)
Intercept Line
Face Yarn (Oz. Per Sq. Yd.)
Stitches Per Inch
Stitches Per 6 Inches
Equivalent Singles Yarn Size (Cotton Count)
EXAMPLE:
Tuft length is 1 inch, 4 stitches per inch, 1s cotton, count yarn. Find ounces of face yarn per square yard. Draw line from 1 inch on "A" to 4 stitches per in. on "B". From where this line intercepts "C" draw line to 1s cotton count on "D". Read ounces per square yard face yarn on "E" as 14.7.

Before you can use this nomograph you must convert your tufted yarn to equivalent cotton count (facing page, below).

Fast Way to Figure Tufted

NEED A FAST, sure way to find the weight of face yarn in tufted fabrics? That's where the nomographs come in.

Using these nomographs, your designer can calculate the face-yarn weight of a tufted carpet without tedious mathematics. For any given stitch count, tuft length, and yarn size, he just finds the ounces of yarn in each square yard and from that, he computes the cost.

But do you design for a given yarn cost? If you do, you may find it hard to choose the right combinations for the most economical construction.

RELATING VARIABLES

Stitch count, tuft length, and yarn count, of course, are the three key variables for any tufted-carpet construction. The relationship of these variables is shown in the following formula:

Weight in pounds per square foot of carpet equals tuft length (in inches) times tufts per inch times 36, divided by 840 times yarn count (cotton single equivalent) times gage (in inches).

Because this relationship involves three variables, it's difficult, tedious work to find the most economical combinations. But you can visualize the effect of changing any one or all of these variables with these nomographs.

You can use these graphs, developed by California Textile Mills, for any $\frac{3}{16}$-in.-gage tufting machine. Here are two examples of their usefulness.

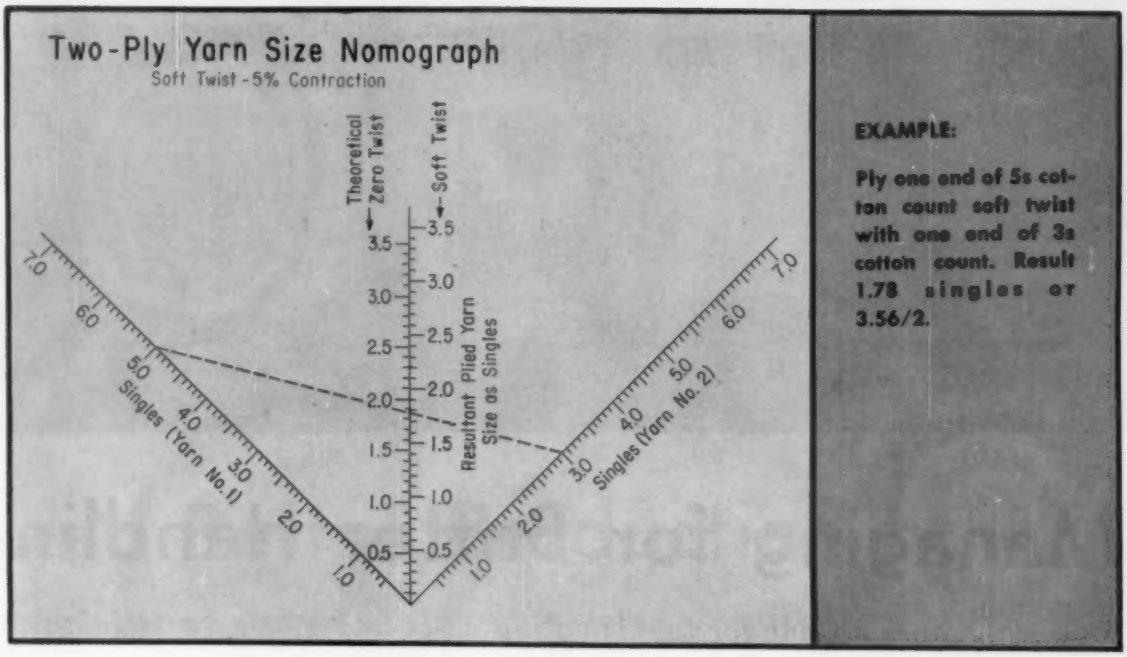
Example 1: Determining the weight per square yard for any yarn number. (Nomograph above.)

With a given construction (stitch count and tuft length) you can determine the effect of face-yarn weight when the yarn number is changed. You draw a line from tuft length (on A) to stitches per inch (on B). Then using the point where the line intercepts "C" as a fulcrum (use your ruler) you determine the weight of yarn for any yarn size.

Example 2: Determining construction for given weight per square yard of yarn. (Nomograph above.)

When the maximum allowable cost of face yarn is known, the designer can find out what is the most feasible construction. He draws a line from the point on "D" (yarn size) through the point on "E" (ounces per square yard of yarn) to a point on "C". Then using this point on "C" as a fulcrum, you determine the most feasible construction on "A" (tuft length) and "B" (stitches per inch) to make the carpet at the predetermined cost—the cost you were shooting for.

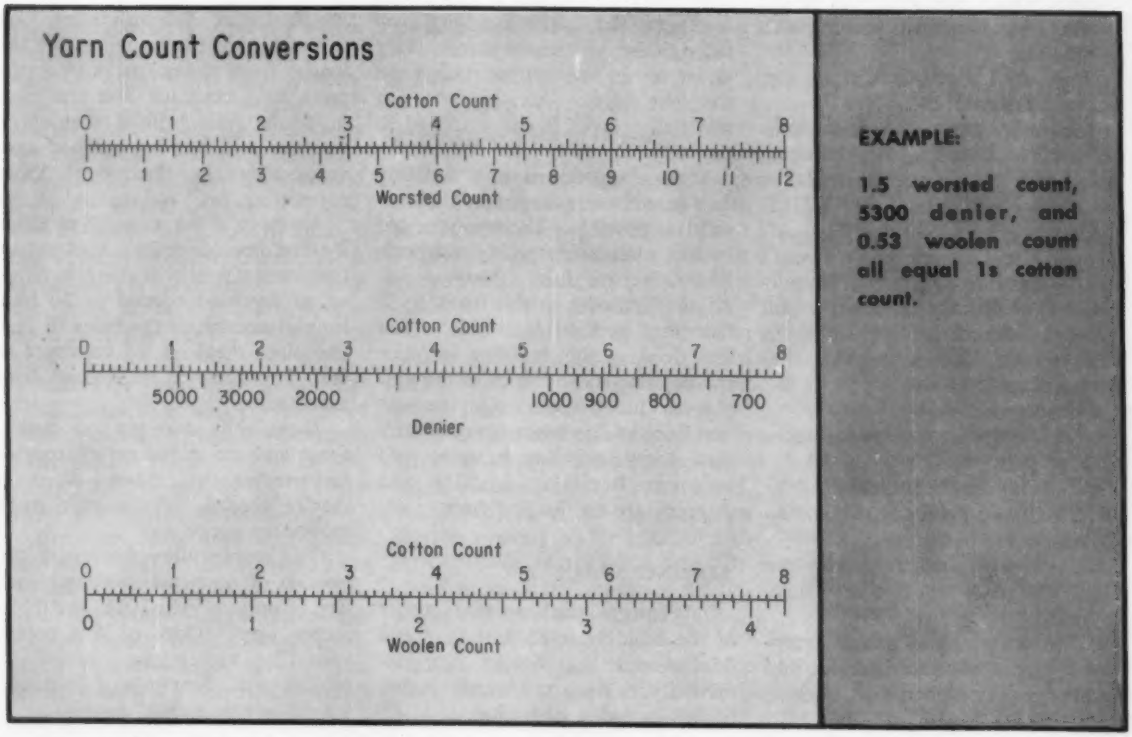
To assist in the use of the "carpet-weight" nomograph, there are two additional graphs. One gives you a quick way of finding out equivalent singles yarn count, when the two yarns plied are of different sizes. The other converts the yarn count from woolen, worsted, or denier directly to an equivalent cotton count.

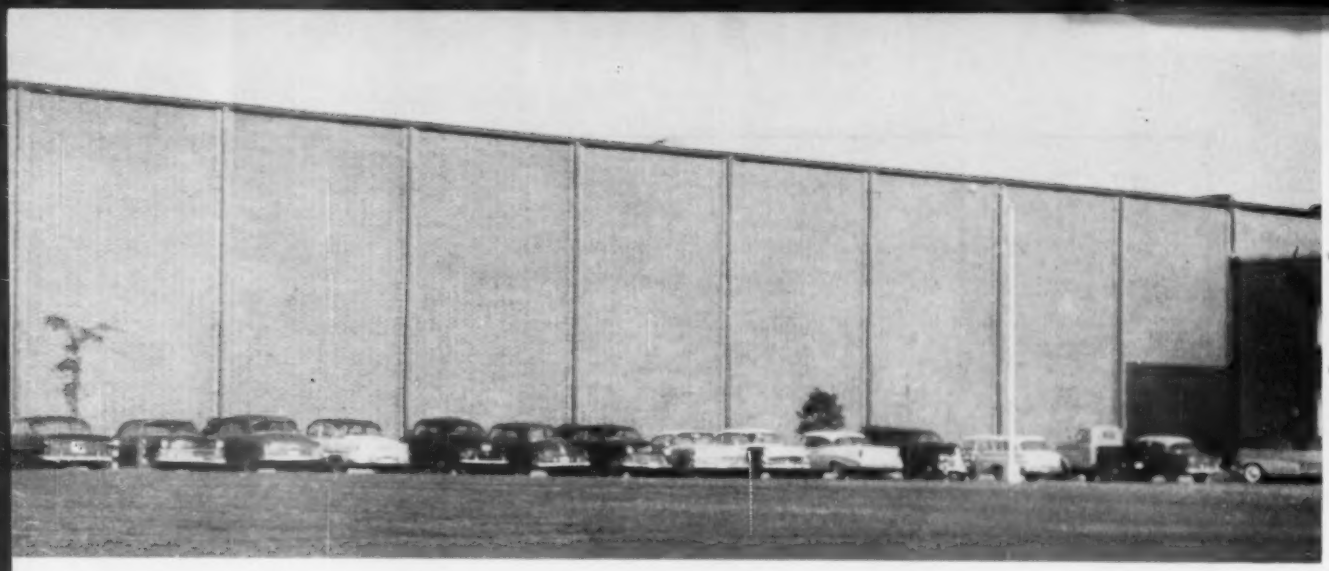

Two-Ply Yarn Size Nomograph
Soft Twist - 5% Contraction
Theoretical Zero Twist
Soft Twist
Resultant Plied Yarn Size as Singles
Singles (Yarn No. 1)
Singles (Yarn No. 2)
EXAMPLE:
Ply one end of 5s cotton count soft twist with one end of 3s cotton count. Result 1.78 singles or 3.56/2.

To convert two-plied yarns of different size to singles cotton count, use this nomograph.

Carpet Weight

To convert worsted, denier, or woolen count to singles cotton count, use this conversion.





Managing for Better Handling

This plant goes all out for low handling costs and employee training that assures management an opportunity every day to capitalize on efficient handling, clean layout, and first-rate equipment.

THE BUILDING and layout you see in the photo above (and on the pages that follow) is the result of a clear idea. The idea was to cut material handling costs just as much as possible.

This is The Firth Carpet Co. plant at Laurens, S. C.

Last month, you saw how Firth-Burnsville is cutting its handling costs with automatic, straight-flow equipment and layout (TEXTILE WORLD, Feb. '61, p. 52). Although the Laurens plant doesn't offer quite the spectacular opportunities of Burnsville, there's still plenty of impressive cost-saving in each square foot of this 180,000 sq.-ft. plant.

For instance:

. . . *Automatic conveyor* takes care of yarn receiving.

. . . *Beaming is continuous.*

. . . *Drying proceeds without interrupting* the beamers' cycle.

. . . *Weaving and inspecting are brought close together* to save time, cut handling.

. . . *Finishing, with special equipment:* carpet is backed, dried, and sheared in one continuous, flowing operation.

GAGING EFFICIENCY

Best way to get the feel of Firth-Laurens is to watch a carpet 15 feet wide and 1,000 feet long drop through the floor of the second story down to an inspection station on the first floor. All this goes on while the carpet is still attached to the loom.

Firth designed its new building to eliminate as much material movement as possible. The two-year-old building has two stories, each with 87,000 square feet. Also an additional building at the front is 75 feet long and 40 feet wide. The first floor of this building is office space. The second floor is the employees' lunch room. On the second floor of the main plant, there's yarn storage, winding, beaming, and weaving. Receiving, finishing, and shipping are on the first floor.

ADDING SPACE

A penthouse at one rear corner of the building is 85 feet long and 45 feet wide. It houses two gas-fired dryers for sized warps during Firth's beaming operation.

Finished yarn comes from Burnsville or from one of Firth's other yarn mills in burlap-covered bales. There are four shipping and receiving platforms, each with tilting dock.

Bales of yarn on pallets are unloaded from motor trucks by a propane-gas fork truck and are taken inside the mill. Instead of an elevator, the mill has an inclined conveyor near the loading platforms connecting first and second floors.

An electric eye actuated at either the first floor or second floor causes the conveyor belt to operate either up or down as needed at 30 fpm. Employees unload the bales of yarn and place them on the conveyor so that they move to the second floor automatically.

There they are put on pallets again and are stored or transported to winders or looms—wherever they're needed. An electric truck moves the goods.

On Lazenby filling winders, 1,200 pounds of yarn are rewound each day. Cops are 9½, 10½, and 12½ inches long. Cops of 4/4 cotton yarn 12½ inches long average 6½ ounces each. Jute yarn of 16-pound weight averages 5½ ounces.

PLANT BUILDING (just two years old) boasts two floors plus penthouse. Offices and employees' lunch room are in front. Lot has 90 acres, and each floor has 87,000 square feet of space.

and Better Production

BEAMING—CONTINUOUSLY

There are two beaming machines, one for jute yarn and one for cotton. Jute yarn sized and beamed is of 13-lb. weight. Cotton yarn is 8/3. Yarn is stored around the creels in horseshoe fashion so that it's within arm reach of creel hands.

Up to 2,800 ends are beamed on jute warps. On a warp for a 15-ft. loom, for example, there are 1,600 yards of single-ply ends per beam. Yarn weighs 800 pounds. Cotton warps go up to 1,700 ends. A warp with 1,200 yards weighs 700 pounds. Starch and No. 2 beeswax are used as size. Filling yarn, too, is sized with this same material and a mildew resistant.

Wet warps go upward through the ceiling into two Andrews & Goodrich gas-fired dryers. Beaming speed is 28 yards per minute on cotton yarn and 30 yards per minute on jute.

Most face yarns are all-wool, but Firth weaves a large number of Acrilan-faced carpets. Common yarn numbers are 3/45s, 3/50s, 3/60s, 4/29s, and 3/40s. These yarns are creeled at the loom.

Firth has three makes of looms in two types. Broadlooms are Lansdowne, narrow looms are C&K, and the others are Dobross (an English loom). Most looms are wilton. The others are velvet. But wilton looms are also run as velvet looms when they're needed.

Firth uses the quarter system in production control (quarter = 9 inches). There are a total of 32 looms divided into the following widths by quarters: three looms ¾, eight looms 4/4, one loom 8/4, four looms 12/4, two looms 16/4 (velvet), six looms 16/4 (wilton), two looms 20/4 (velvet), and six looms 20/4 (wilton).

All carpets from 3 to 15 feet wide go through the floor of the weave room to machines below where they are inspected and mended on both the face and back.

FINISHING: FAST WORK

The finishing range is only a short distance away. Carpets move to this area by an electric truck.

In finishing, the carpets are first backed with latex. The latex is made in Firth's Firthcliff, N. Y., plant and is shipped to Laurens in tanker trucks. At Laurens, there's a 12,000-gal. latex-storage tank from which latex is drawn.

In tandem with the latex coater is an Andews & Goodrich gas-fired dryer. Natural gas is the usual fuel, but there's a 6,000-gal. tank for storing propane gas for stand-by use. A Curtis & Marble Machine Co. shearing machine completes the finishing range. Carpets pass through the range at 5 fpm.

Then carpets are placed on the floor directly at the end of the finishing range for final inspection. Three rows of 4-ft. fluorescent lamps are located end to end throughout this inspecting area. Four incandescent spotlights at 45-degree angle augment this lighting. Depending on the style of carpet and the type of defects expected, these lamps are used separately or together for best effect. At this point, carpets up to 1,000 feet long are usually cut into 25- to 30-yd. rolls. There's also a narrow Curtis & Marble Machine Co. narrow shearing machine for shearing 27- to 36-in. carpets.

Inspected carpets are rolled and baled. They're stored in racks with a ram by an electric truck. Then they're shipped by orders.

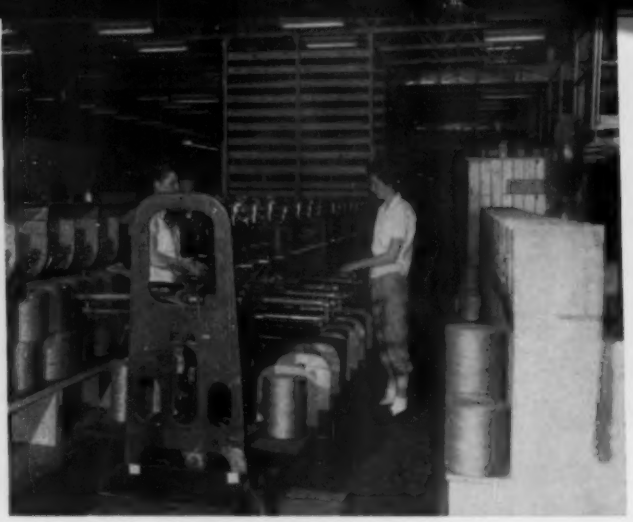
BUILDING IN SERVICES

Service equipment is ideally housed and located at Firth. This equipment is at the back center of the building. Although equipment is placed in compact areas, there's adequate room for maintaining it. Each of three sections is 25x30 feet.

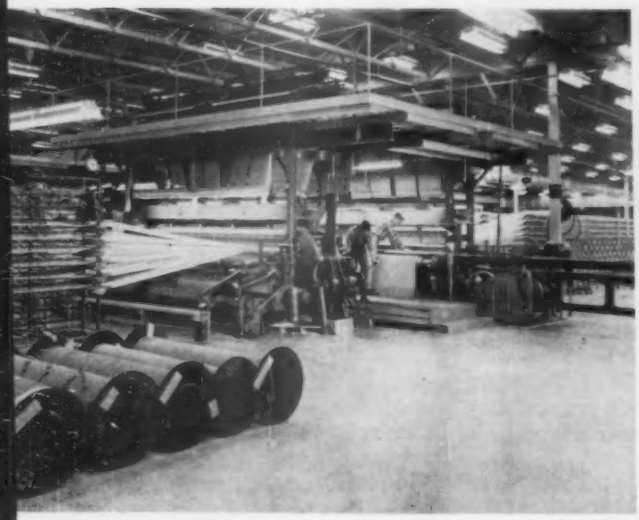
An 80-hp. Ames boiler for process steam produces 6,000 pounds per hour. Two Dravo gas-fired unit heaters with a total output of 1½-million Btu. heat the plant.

Power comes from a Duke Power Co. substation at 50,000 volts and is dropped to 440 volts. Firth's switchgear is a General Electric six-circuit panel board with provisions for adding panels. Capacity is

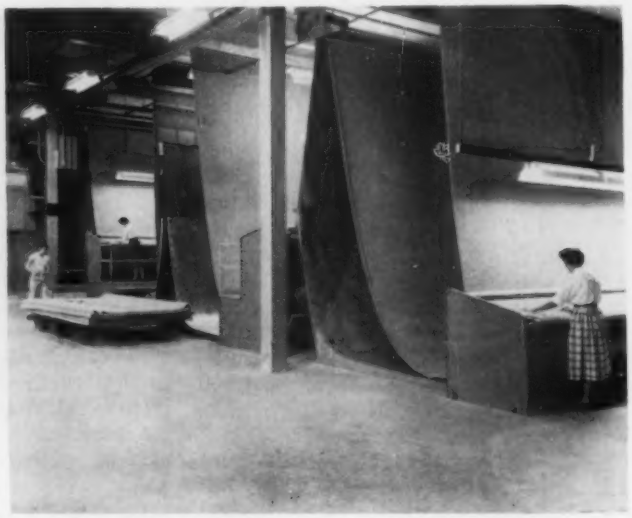
AUTOMATIC CONVEYOR moves yarn from receiving area on first floor to second floor. Conveyor is controlled by a photo-electric cell that governs forward and backward motions.



YARN STOCK to be copped as filling yarn comes within easy reach of operators by means of electric truck. Winders rewind 1,200 pounds of filling yarn each day.



LOOMS weave carpets as wide as 15 feet. Carpet (center) goes through the floor as soon as it's woven, moves to inspecting machines directly below.



INSPECTION is a part of weaving at Laurens because the carpet is still attached to the loom. Two inspectors give face and back of carpet simultaneous scrutiny.

BETTER HANDLING . . . *Begins on page* 58

1,600 amperes at main breakers. Average load is 600 amperes. Presently Firth uses an average of 210,000 kilowatts per month.

Air for plant equipment is furnished by a Chicago Pneumatic compressor. An American Standards compressor serves the air-conditioning unit. There are two fan rooms for the chilled-water system, one on the first floor and one on the second. Capacity of chilled water is 2,000 gallons, and air-conditioning capacity is 343 tons.

The weave room is held at 55% r.h. and 75 F., finishing is 50% r.h. and 74 F., and offices are 55 to 60 r.h. and 74 F.

The city of Laurens provides water. There's a 150,000-gal. ground tank at Firth for storage, plus an elevated 100,000-gal. tank.

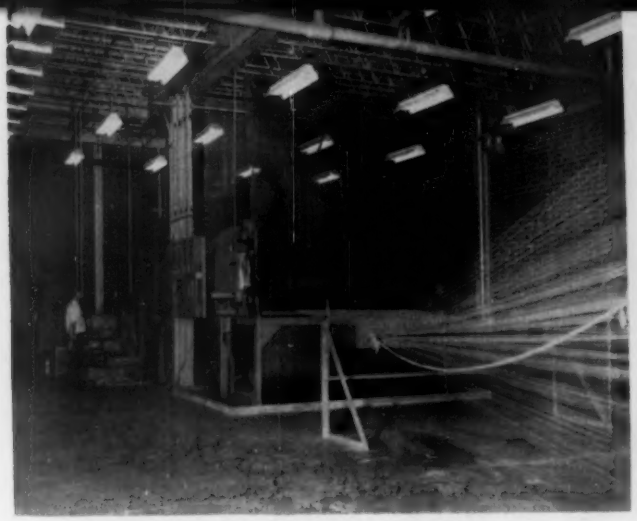
TRAINING EMPLOYEES

Firth's Plant Manager P. J. Austin came down from the company's Newburgh, N. Y., plant to start the first loom at the Laurens mill. He brought five employees with him, all loomfixers. Today, there are 212 employees at Laurens.

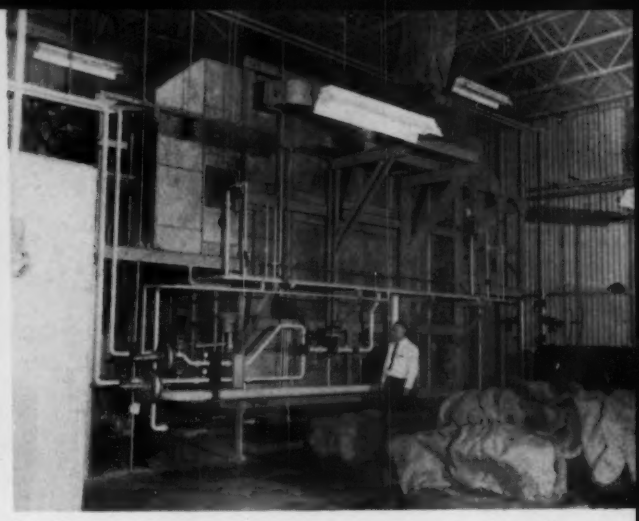
So there's been two years of constant training. Most jobs have not required extensive training. In finishing, for example, Austin says: "These men took to finishing like ducks to water. With instructions for machine operation written down point by point, we had no trouble."

But loomfixer and weaver training has been a constant and tedious job. Of the five loomfixers who came to Laurens from Newburgh, one is general foreman, three are shift supervisors for wilton looms, and one takes care of velvet looms.

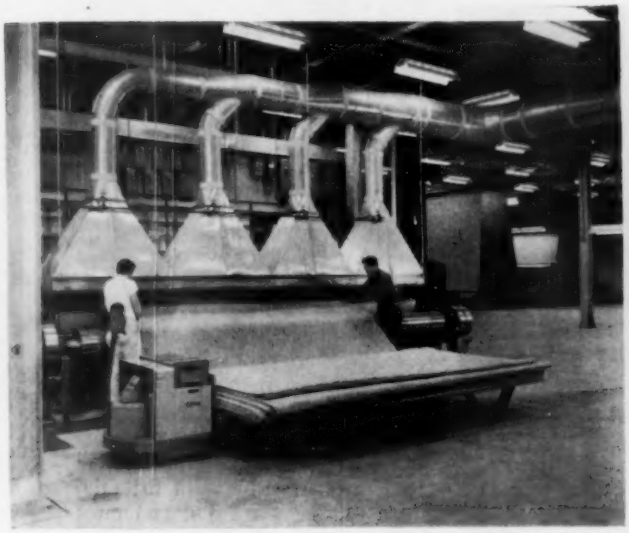
At the beginning of production at the mill, each loomfixer from Newburgh taught two weaver-learners



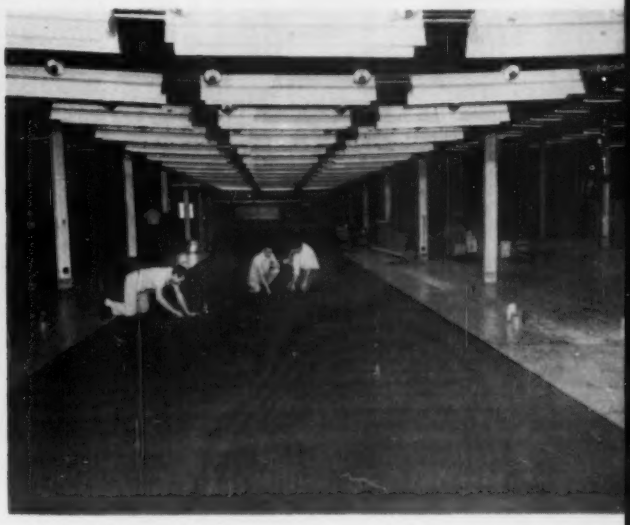
BEAMERS, which are on second floor, receive yarn from a creel where it is placed in horseshoe shape around the creel. Sized yarn goes up through floor to gas-fired dryer in penthouse.



DRYERS, which are in the penthouse, are out of the air-conditioned zone of the mill's production area. Beaming isn't interrupted by drying operation.



FINISHING begins with a latex-coating machine, continues through a gas-fired drying section, and ends with a shearing machine. Speed of the drying section is 5 fpm.



FINAL INSPECTION depends on two sets of lamps to show minute defects. Fluorescent lamps show over-all defects. Incandescent lamps pinpoint specific flaws.

on two looms. Then loomfixers split the weavers, trained more, and ultimately the loomfixers became supervisors.

To date, there have been four classes for training weavers. In the present class, there are 25 learners.

CHOOSING WEAVERS

All weavers trained are men who live within a radius of 20 miles of Laurens and are between the ages of 18 to 24. To date, learners have been quite reliable. They show a lot of interest, and work attendance is good.

New trainees selected are working on one of the three shifts at the mill. (Eight men are taken from each shift.) The usual jobs of these men during training include tying in warps, making style alterations, and to help the production weavers.

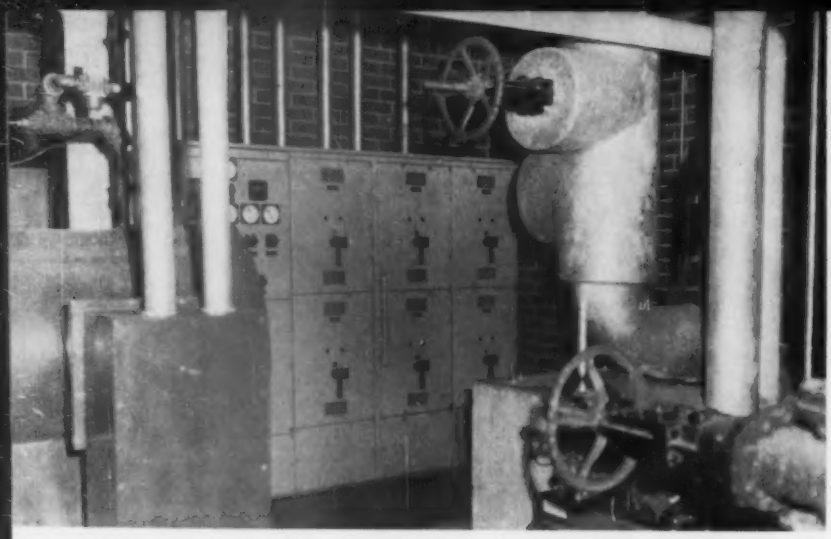
Classes are held on Saturday morning at the mill on employees' own time. At first classes lasted 3 hours. With constantly improved methods, sessions are now only 2 hours long. Austin teaches the classes himself.

He tells learners how to put in new warps, how to change styles, and how to take care of looms and pile wires. Learners hear how to detect wire marks and how to find the causes of the marks. Then they learn how to correct wire marks, how to identify broken patterns, how to care for shuttles and how to fix smashes.

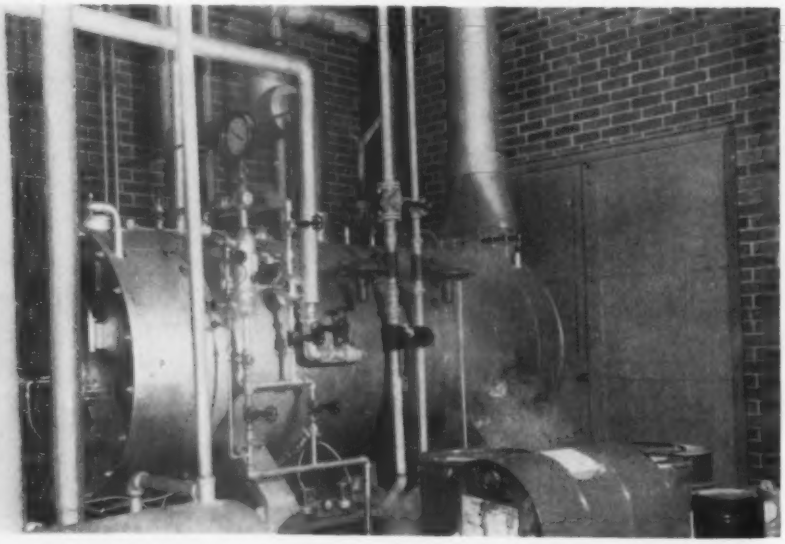
PRACTICING SKILLS

After a half-hour skull session, trainees move out to the looms in groups of four with one weaveroom supervisor in charge of each group. The supervisor runs a loom and tell trainees what they've learned by demonstrating such things as fabric defects and loom malfunctions.

. . . Turn the page

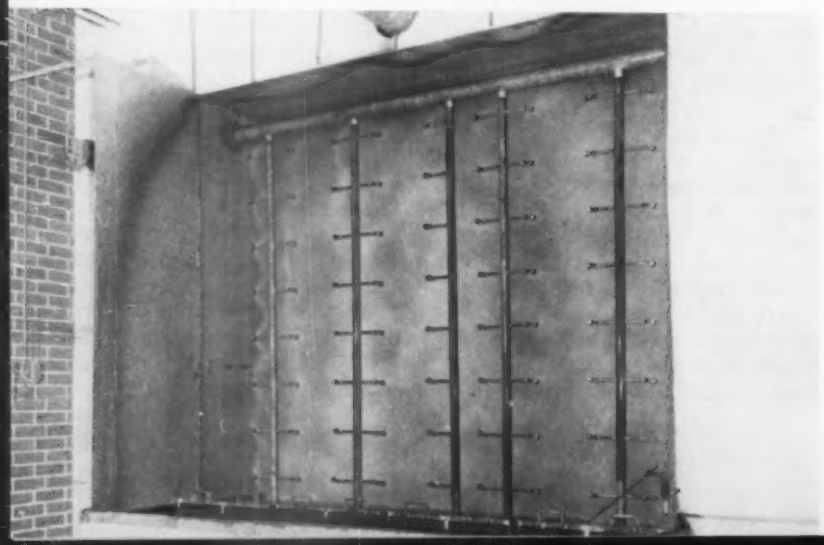


SERVICE EQUIPMENT is at the back of the mill in the center for quick accessibility. Switchgear is 1,600 amperes. Average load is 600 amperes for six circuits.



BOILER for process steam is supplemented by two gas-fired units for plant heating. Each heating unit has an output of 1½-million Btu.—more than enough for the job.

CHILLED-WATER SYSTEM for air conditioning has two fan rooms, one on the first floor and one on the second. Air-conditioning capacity is 343 tons.



BETTER HANDLING

. . . *Begins on page* 58

Then all the learners go back into the classroom, where Manager Austin quizzes them for an hour on hypothetical loom actions. To avoid favoritism, he picks men alphabetically to answer his questions. If a man can't come up with the right answer, Austin asks for a volunteer. If no one can give the right answer, Austin explains the full details of the loom movement once again.

Depending on how fast trainees learn, a course runs from 12 to 15 weeks. At the end of the course, each learner takes a written exam. Passing score: 75. Top score: 95. With a grade of 75, a man gets his certificate. He must also attend eight classes. Learning time can be as short as six months, but usually a year is more like it.

LOOMFIXERS—THE BEST

Loomfixers are also trained under Plant Manager Austin's personal supervision from his own book on loomfixing. He's a loomfixer himself. That's why he makes every possible effort to see that his loomfixers are as well trained as possible. Fact is, he says a loomfixer is still an apprentice until he's been on the job three full years.

Loomfixer trainees are selected from the best weavers in the mill, are 23 to 27 years old, and must have these qualifications: mechanical ability, perseverance, ability to get along with people, regular work attendance, and sobriety.

Meetings are held one hour every week. Subjects discussed for ½ hour are methods of doing a given job and current happenings on looms in production.

The next half-hour is spent in completely tearing down and rebuilding a loom verbally. All loom parts are studied: harness movement, picking motion, and jacquard wires. This discussion continues indefinitely through all classes.

After a few weeks, Austin begins asking questions of loomfixer-learners just as he does weaver-learners. Sample question: How does a loomfixer detect what happens to cause knocking off, or harnesses not changing? Each fixer will be given this training for three years.

DESIGNER (right) describes new styles developed to meet the changing knitwear trends.

This knitting mill stays strong and competitive by

Moving Fast on New Styles

Using ten different types of knitting machines and the auxiliaries that go with them — dyeing, finishing, napping, quality control — this company designs and delivers new style fabrics as the market needs them.

IF YOU WANT to keep abreast of the ever-changing knitwear market your mill must be versatile—must respond quickly to fabric-style trends and changes. Recent trends include the use of bulky yarns, stretch yarn, double-knit fabrics, and laminates.

The trouble is, you can't always produce the fabrics required for these style changes on your present equipment. At the least, you have to modify machinery or change knitting procedures. To be a leader on styles (which generally results in a better profit picture) you have to read trends and develop fabrics to meet these changing requirements.

Management men at Fair-Tex Mills, Inc. (Catasauqua, Pa.), pride themselves on versatile production and fast delivery to the New York market. Here's how they do it:

- Knit with ten different types of knitting machines. Total machines: over 250.
- Dye their own bulky yarns at their plant in Reading, Pa.
- Dye and finish fabrics on the site at Catasauqua, Pa.
- Nap fabrics for special brushed styles.
- Operate their own trucks for overnight delivery to their customers in New York City.
- Style fabrics on regular production equipment.
- Communicate by Teletype with the New York sales office.
- Inspect the fabric twice before delivery.

MEETING NEW TRENDS

Fair-Tex uses ten different types of knitting machines, including spring needle, ribbers, interlock jersey, and tape knitters for accessories (cuffs, collars). But the latest, new equipment is Morat double knit units. There has been a strong trend for these double-knits but Fair-Tex, in staying ahead of the field, has put in fine-gage equipment. Some machines are in place and running, other units are on order—an investment of $150,000.

The Morat machines are running on Orlon Cantrece, Helanca, and cotton. Production averages three pounds per hour. These units use a dial adjustment for varying speed. Right now Fair-Tex runs at the slower speeds, but as production settles down, after break-in, the output should more than double.

MAKING MANY FABRICS

While double-knits are one of the hottest things in today's market, Fair-Tex makes many types of circular-knit fabric. Plain jerseys range from 5 to 9 ounces per yard at 46 inches in width, with the cut varying from 10 to 28. Plain and fancy terry cloth, using various fibers, comes in 60-in. finished width. These terry fabrics range from 8 to 16 ounces per yard.

Fleece or brushed fabrics, made from cotton, nylon, or Orlon, go into underwear, sweater shirts, jacket and coat liners, and outer-

NEW STYLES

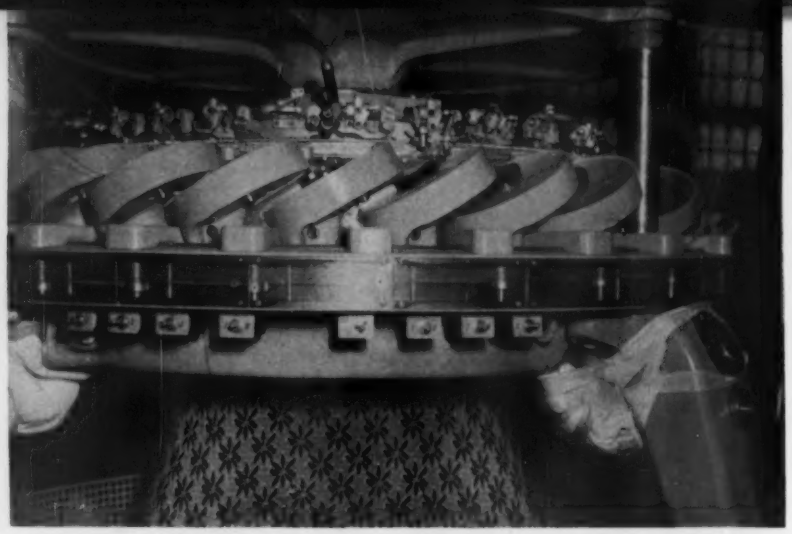
. . . *Begins on page* 63

wear. While the nylon or Orlon face (pile) is 100%, the backing yarn may be cotton depending on customer requirements. Fair-Tex also runs cable knits, jacquards, cuffs, and collars.

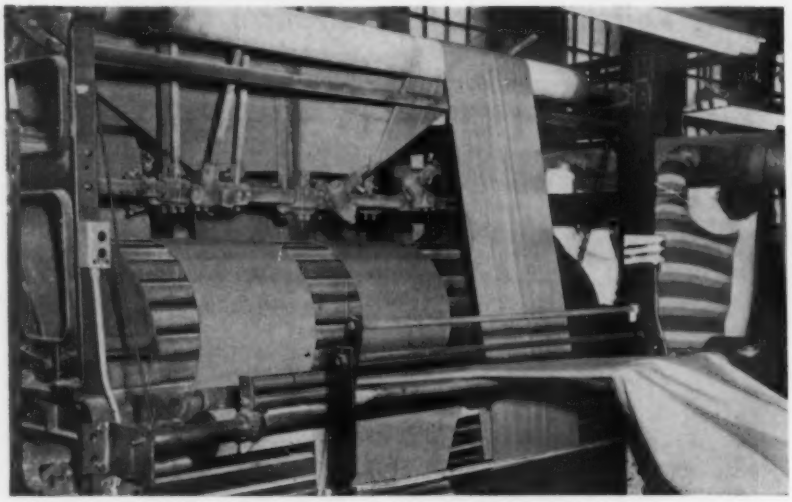
For its double-knit fabrics Fair-Tex uses all the popular yarns: acrylic, nylon (Helanca), cotton, and polyester. These double-knits come in a range from 10 to 24 cut.

Other styles being made are swimwear fabrics. Some of these are made on Supreme tuck machines using 32 feeds with four colors for each feed. Many swimwear styles use elastic yarn. Output goes up to 20 yards per hour.

Helanca yarns in 70/2 are run on 3-position Supreme knitters. These units have 32 feeds and output averages 8 yards per hour.



KNITTING double-knits on the fine-gage machine. Design wheels provide a wide range of fabric styles for Fair-Tex customers.



NAPPING of pile fabric is done on the tubular goods. Fabric passes through on one side, is turned over and finished on the other side—all in one pass.

FAST TURNAROUND

All these qualities make for a complicated and large yarn inventory—especially when Fair-Tex prides itself on being able to make fast delivery. The company used to turn over its inventory 12 to 15 times a year but now the inventory turns over only 5 to 6 times a year. This means a much larger inventory position (10 to 12 weeks). But now Fair-Tex can fill a sample request in a week's time and start production on new orders immediately if equipment is available.

This fast response starts with the yarn inventory but it takes two other factors to produce the reality. Fair-Tex has its own bulky-yarn dyeing plant at Reading, Pa. (only a few miles from Catasauqua) and company trucks make daily trips between plants. And, in addition, the Catasauqua price-goods dye house has a sample dyeing beck. This unit handles up to 70 pounds of fabric. For immediate delivery to New York City, the company-owned trucks make overnight trips.

NO SACRIFICE IN QUALITY

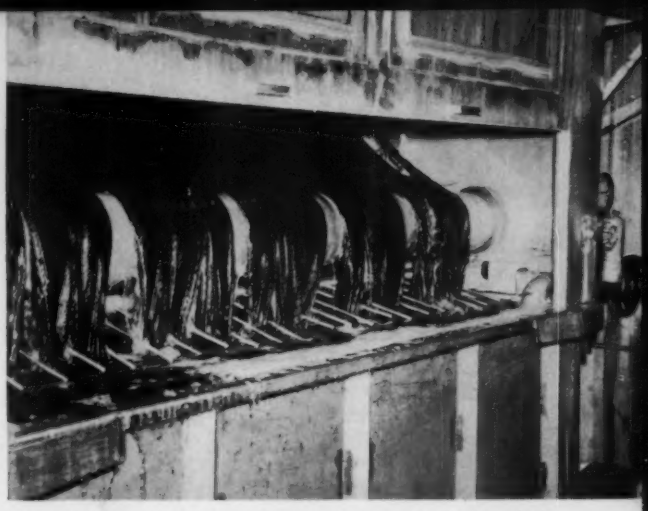
Even with the great variety of fabric styles and different yarns used, Fair-Tex maintains a high quality standard. Quality control starts in its test laboratory adjacent to the dye house. All bulk shipments of chemicals and dyes are tested for uniformity of product and specifications. Next, all yarn shipments are spot checked for quality before dyeing or knitting.

By dyeing many of its own yarns, Fair-Tex has direct control over this part of the production. In fact, quality is controlled from the point of purchasing the yarn on through to the finished fabric delivered to the customers. In this way the company has direct control over all quality features. Inspection (done by the knitters) starts in the knitting room as the fabric is being made. Then each piece receives a 100% inspection (photo on facing page) prior to finishing, with all defects tagged. The final inspection, again 100%, takes place after dyeing—during the calendering and measuring.

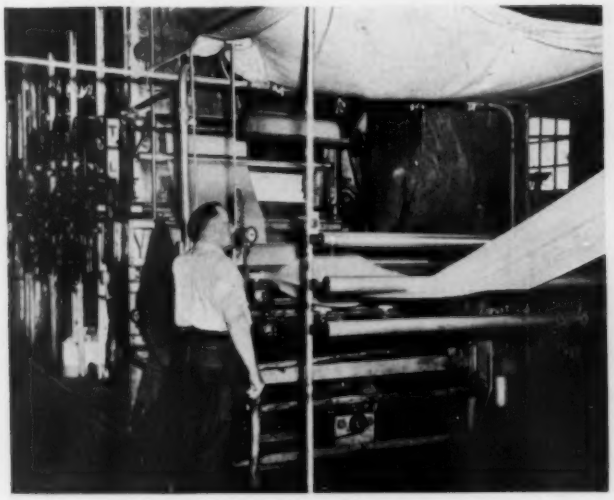
This means two 100% inspections. But in addition, Fair-Tex spot checks each style fabric for dimensional stability. These tests are run before shipment of a new production style and on all newly developed fabrics.

Production and quality records are maintained for each knitting machine on each style of fabric and for each customer. As a final control, each piece is weighed. The weight is automatically printed on the ticket. Result: few if any customer complaints on weight.

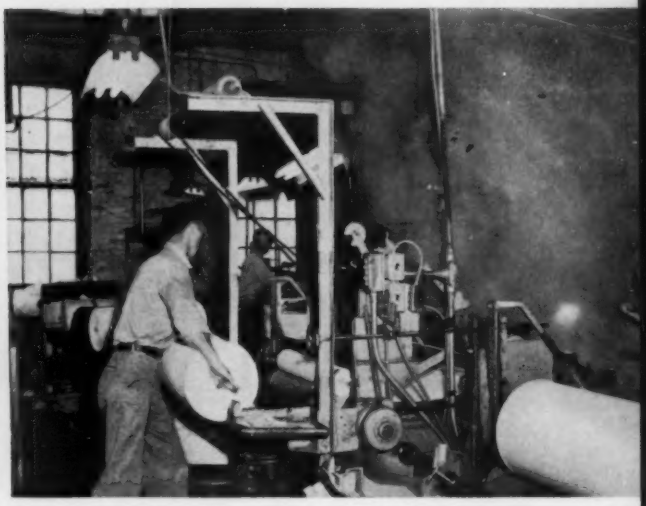
INSPECTION takes place before finishing. Both sides of the fabric are inspected simultaneously.



DYEING in rope form is done on these 16-ft. becks. Fair-Tex uses stainless-steel tubs to transport all wet fabrics.



DRYING is done on this straight-through dryer. This unit uses steam for heating the chamber.



CALENDERING and steaming is the final finishing operation. Operator also inspects all fabric at this point.

RUNS OWN DYEHOUSE

The dyehouse handles an average of 125,000 pounds of fabric per week. Fair-Tex uses nine becks for all dyeing. Most of these becks are 16 feet wide.

Shade matching for garment accessories is unnecessary, because Fair-Tex makes all the cuffs, collars, and other accessories—then dyes these items in the same dye bath with the garment fabric.

As part of maintaining a high quality standard, all wet goods are transported in large (4x4x4-ft.) stainless-steel tubs. These tubs take the wet extracted fabric to the next department, which is finishing and dyeing. As R. Berman, President, states, "Doing our own dyeing and finishing may cost us more, but improvement in quality control, delivery, and versatility in styling makes it well worth the slight increase in cost."

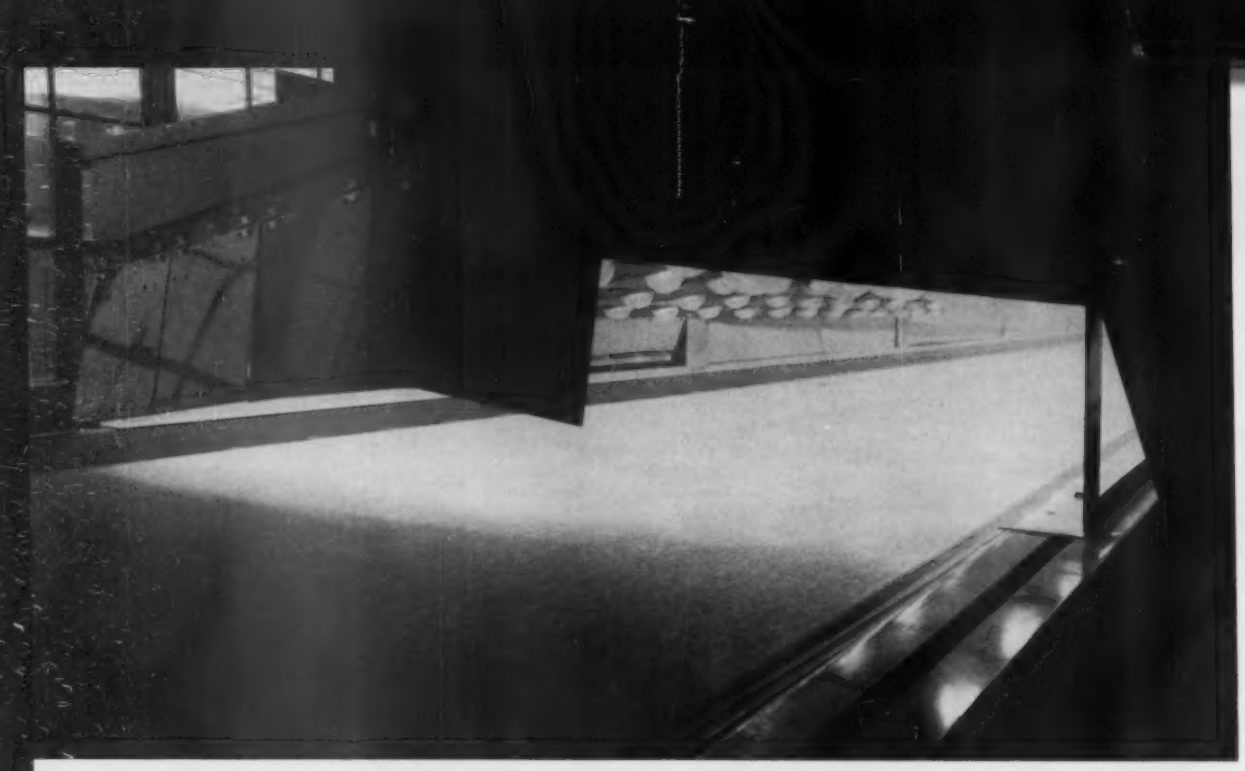
Many fabrics are machine finished but some get a resin or water-repellent finish. This is put on at a rate of 35 yards per minute. All stripped (dyed yarn fabrics) are cut open and sewn together to line up the strips. This is done before any finishing treatment. Then all the fabrics are dryed on one of two units (photo above). One dryer uses steam, the other gas. The gas-heated dryer, which goes up to 350 F., is also used for resin curing or heat setting when required.

Fair-Tex has built a handy turntable into the floor at the back of each dryer. The stainless-steel tubs used to transport the goods through the dyehouse are rolled onto these turntables. Then the fabric in rope form can easily be untwisted as it is fed into the dryer.

After drying the pieces are steamed, calendered, measured, and inspected in one operation.

Once the fabrics are ready for shipment, Fair-Tex still follows with customer service—fast deliveries. The company operates its own trucks. Deliveries can be made to New York City overnight.

Also, direct communication is maintained between the main office and the plants by Teletype.



NEW INFRA-RED OVEN that dries chemical solvents from the inside out depends on . . .

Good Way to Cut Carpet Drying Time

This carpet finishing operation now speeds along more than four times faster than formerly because of sophisticated control, carefully engineered equipment, and new flexibility in handling the goods.

THE PANEL of controls and that long, bright oven in the photos above are causing a quiet revolution in production techniques at Seamloc Carpet Company (Sanford, Me.) these days.

Seamloc is processing broadloom carpet so much more efficiently than it used to that the company expects to . . .

- Save $8,000 a year on maintenance.
- Cut drying time 75% (from 30 minutes to 7).
- Regain valuable floor space that used to be taken up by bulky steam-drying units.

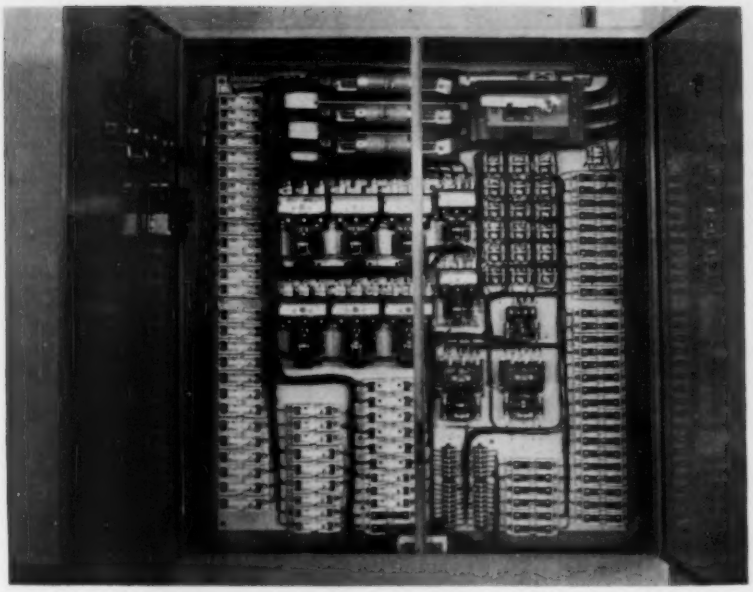
The infrared oven, which was designed and made by Fostoria Corp. (Fostoria, Ohio) at a cost of $32,600, plays the key role in drying solvent chemicals that lock the pile into the warp. (At the same time, these solvens laminate scrim to the back of the carpeting.)

By LAWRENCE L. REEVE,
President, Seamloc Carpet Co.,
Sanford, Maine

OLD WAY: FOUR PASSES

Before the new oven was installed, Seamloc dried the cements with a steam-heated oven. It took four separate runs over steam-heated cans to do the job. With the steam system, heat was applied from the cans to the face (rather than to the back) of the carpet. That meant that heat had to be conducted through the rug.

There were other draw-backs with the steam-heating system, too. For one thing, there was the time-consuming heat-up period. For another, it took an engineer on call to assure proper operation of the steam system. There were steam lines, connections, traps, valves, and other equipment that required constant looking after. Added to that, the steam system required 280 feet of carpet to be in the oven at a time.



SPECIAL CONTROL PANEL, which governs the finishing cycle.

Today, carpet moves through the Fostoria oven at 10 yards a minute. One important factor in increased speed of drying is that with the infrared oven, heat radiates directly onto the coated side of the carpet.

There's more versatility, too, in the new unit. Seamloc can use different types of cements to day to get the best chemical and physical performances from each, because heat output can be controlled within plus or minus 10 degrees (F.). Another big advantage is this: Infrared drying in much cleaner than steam drying. And the new oven is extremely neat and compact. Because the old unit required 280 feet of continuous length in the drying oven at a time, it took up lots of room. The new unit takes 90-ft. units of carpet, or odd-size units longer than 90 feet. As for maintenance costs, only a minimal amount of labor is involved now.

Except to clean lamp reflectors twice a year and replace burned out bulbs, there's no maintenance to speak of.

HOW THE OVEN WORKS

The Fostoria oven has a power capacity of 300 kw. (Electrical service to the oven is 480-volt, 3-phase, 60-cycle.) Carpets up to 60 inches wide (or as narrow as 36 inches) can be processed through the oven.

There are three sections of the oven. The first is 18 feet, 4 inches in length, with 30 T-3, 3,000-w., 480-v., quartz infrared lamps. The second zone is 36 feet 8 inches long, and has 240 clear infrared (type G-30) 500-w. lamps. The third zone is also 36 feet 8 inches long and has 240/clear (type G-30) 375-w. lamps.

Seamloc uses quartz lamps in the first zone of the oven because carpet comes in cold, thus can tolerate the high heat of the quartz lamps. Power density in the first heat zone is approximately one kilowatt per square foot of energized oven area. In the second and third zones, the power density is lower because the carpet couldn't stand a continuous environment of one kilowatt density. The G-30 type lamps put out 500 watts per square foot in the second zone, and 375 watts in the third zone.

Fostoria estimates life expectancy of the T-3 quartz lamps as well as G-30 infrared lamps at 5,000 to 10,000 hours. Lamp replacement costs will run somewhat less than $300 a year.

Each heating zone is controlled as an independent unit through the panel board (photo) that cycles the lamps between full and half voltage on an inside delta circuit. Because of this precise control, carpet cement dries from the inside out. The first zone radiates heat way down into the cement, thus drying the inside.

Then the other zones finish drying the middle and the outside of the cement bond. That's why drying of heavy coatings can be done in relatively short order. One other aid to rapid finishing: the first 14 feet of the first zone is designed with down-draft ventilation. Reason behind that is that carpet is cold when it first enters the oven. The solvents in the cement are heavy. It takes the down-draft to remove them. In the last four feet of the first zone and in the second and third zones, there's an updraft ventilation system. By the time the carpet gets to these points the solvents are hot and are lighter than room temperature.

HANDLING AIR

The control panel also regulates the air system for the dryer. Seamloc's engineers figured that about 20,000 cubic feet of air a minute would be needed to carry off the evaporated solvents. So they installed 15 (Clark Blower Co.) 1,600-cfm. blowers with a total capacity of 24,000 cfm. That makes a safety margin in excess of the worst drying conditions possible. The first 14 feet of the oven—the hottest zone—has blowers both top and bottom, which keep the oven pressurized with fresh air and enable the operators to vary air input according to the kind of chemicals being used.

CONTROLLING THE OVEN

Power flows into the oven through an automatic system built into a Joint Industry Conference specification panel board. The controls meet all insurance and Labor Department requirements for oven installations. There's a pre-surge cycle before the oven can be started up. There's an interlock with the exhaust system, which automatically shuts off the oven if the exhaust system fails. Finally, there an interlock with the conveyor system. If the conveyor stops, so does the oven.

TABLE 1

How San Joaquin Valley Early Season California Acala 4-42 Cotton Rates

Properties	Season					1955-59 average	Season 1960
	1955	1956	1957	1958	1959		
Grade index	103	101	102	104	102	102	100
Staple length (1/32 inch)	35.2	34.1	34.2	33.9	34.0	34.3	34.3
Tensile strength (1,000 psi)	91	90	88	94	93	91	93
Micronaire value	4.4	4.5	4.6	4.7	4.5	4.5	4.3
Neps (per 100 square inches of card web)	11	16	10	10	10	11	15
Manufacturing waste (%)	7.5	8.5	7.4	7.1	6.8	7.5	6.7
Average break factor	2,580	2,610	2,640	2,620	2,740	2,640	2,660
Yarn-appearance index	100	95	101	97	102	99	101

Cotton Crop News: Deltapine

This Mississippi-bred cotton is making rapid inroads in the Imperial Valley and in Arizona, too. Reason? Greater yields per acre for the grower. Effect on spinners? Not much—yet.

YOUR FUTURE spinning operations may be in for a change as a result of a transition in cotton growing tactics in California and Arizona. Here's what's happening:

Growers are moving swiftly to Deltapine Smooth Leaf because of its higher yield per acre. Only five years ago, almost all acreage in the Far West was planted to high-strength Acala strains. Acala 4-42 was predominant in California. It's still the only cotton grown in the San Joaquin Valley. (There's a law to that effect.) But 84% of the Imperial Valley acreage last year was devoted to the Deltapine variety bred in Mississippi.

Arizona, too, is swinging over to Deltapine, but not so fast as California. Last year, about 20% of the Arizona acreage was planted to the higher-yielding variety. TEXTILE WORLD observers think Arizona's Deltapine acreage will soar over 60% this year.

You may be worried about the impact of this change on the spinning values of cotton from these areas. But apparently the growers are not concerned about minor deterioration of spinning values—because of the increased yield. In fact, California growers have been willing to sell this high-yielding cotton for less because it gives a bigger net return per acre than Acala 4-42.

By F. L. GERDES, Cotton Technologist U.S. Department of Agriculture, Retired Leland, Miss.

TABLE 2

How Imperial Valley Early Season Acala 4-42 and Deltapine Cotton Compare

Properties	Acala 4-42				Deltapine					
	Season			3-year average	Season			3-year average	Season	
	1956	1957	1958		1956	1957	1958		1959	1960
Grade index	104	104	104	104	104	104	104	104	94	99
Staple length (1/32 inch)	34.0	33.0	33.0	33.7	34.0	34.0	34.0	34.0	33.0	34.0
Tensile strength (1,000 psi.)	98	94	103	98	85	87	86	86	88	87
Micronaire value	4.7	4.6	4.6	4.6	4.8	4.9	5.0	4.9	4.7	4.7
Neps (per 100 square inches of card web)	27	10	14	17	16	9	8	11	19	26
Manufacturing waste (%)	7.8	7.4	8.3	7.8	7.1	7.6	6.7	7.1	6.4	7.1
Average break factor	2,800	2,640	2,900	2,780	2,530	2,480	2,360	2,460	2,210	2,330
Yarn-appearance index	95	95	105	98	105	105	102	104	95	102

Moves Up

ARIZONA SPINNING—GOOD

In contrast to California, there has been little if any deterioration in Arizona spinning values. Deltapine from the latter area compares favorably in quality with Acala 44, which is rapidly being replaced in some areas.

Now take a close look at cotton from these three major far western areas and see how it stacks up in quality and production.

San Joaquin Valley—This area is still the main source of Acala 4-42, the highest spinning-value cotton available with a modal staple length of $1\frac{1}{16}$ inches. In fact, San Joaquin produces 80% of California's entire crop. This fertile area averages two bales to the acre. Total production is about 1.5-million bales per year.

Table 1 shows trends in fiber and

TABLE 3

How Arizona's 1960 Early-Season Acala 44 And Deltapine Smooth Leaf Cotton Stack Up

Properties	Variety	
	Acala 44	Deltapine
Grade index	100	101
Staple length (1/32 inch)	34.1	34.0
Tensile strength (1,000 psi.)	86	90
Micronaire value	4.5	5.0
Neps (per 100 square inches of card web)	16	11
Manufacturing waste (%)	7.1	5.9
Average break factor	2,380	2,340
Yarn-appearance index	98	105

. . . *Begins on page* 68

Big Lure of Deltapine: More Cotton Per Acre

spinning qualities during the last five years. Yarn break factor averaged the equivalent of 1⅛-in. cotton, although actual staple length was about $1\frac{1}{16}$ inch. Early-season 1960 cotton compared favorably in breaking strength with the five-year average.

Manufacturing waste for the five-year period was equivalent to that associated with Strict Middling. Actual grade was Middling plus. Early season 1960 cotton, with an average grade of Middling, had a manufacturing waste typical of Strict Middling plus.

SIX EVEN YEARS

Yarn appearance and neppiness have stayed on a fairly even keel over the last six years. But there was a small increase in neppiness in 1960 as compared with the five-year average. This condition is probably due to finer fibers.

Mid-season San Joaquin cotton held up well in all quality elements except neppiness and yarn appearance. There were 24 neps per 100 square inches of card web against 15 for early-season cotton. This increased neppiness caused the yarn-appearance index to drop.

Imperial Valley—In the Imperial Valley of California, production of Acala 4-42 was so low by 1959 that the USDA discontinued its spinning tests (Table 2) on this variety and concentrated on Deltapine. As a matter of passing interest, the three year averages (1956-58) show that the yarn break factor for Acala 4-42 was considerably higher than for the same variety grown in the San Joaquin Valley. This difference in strength was the equivalent of 1⅛ versus $1\frac{5}{32}$ inches in staple length.

Yarn break factor for Deltapine averaged 2,460 during this period against 2,780 for Acala 4-42. But note that in spite of this rather wide difference, Deltapine's break factor still greatly exceeds that of the same variety grown in Mississippi. This fact alone makes Imperial Valley Deltapine acceptable to spinners. Break factor for this cotton (classing $1\frac{1}{16}$ inches) is considerably better than that for other cottons of this staple length.

APPEARANCE—GOOD

Early season Deltapine had a fairly good yarn-appearance grade as compared with the three-year average—generally better than Acala 4-42. Neppiness increased in 1959 and 1960, but the average was about the same as for Acala 4-42 when it was widely grown in the area.

Arizona—Interest in Mississippi-bred Delta cotton grew by leaps and bounds in Arizona during 1960. There was an increase from scattered plantings totaling 25,000 bales in 1959 to an estimated 140,000 bales in 1960, about 17% of the total crop. Growers report yields of one-half to three-fourths bale per acre increases over Acala 44.

Fiber characteristics of Deltapine grown in Arizona last year were for the most part equal to or better than Acala 44. Table 3 shows that there is very little difference in grade and length characteristics. But Micronaire values indicate that the Deltapine variety was slightly coarser than the Acala variety. Nevertheless, the higher strength of the Mississippi variety offsets this difference as both varieties showed about the same yarn break factor.

Deltapine had a manufacturing waste equivalent to that normally associated with cotton grading better than Strict Middling, while Acala 44 had a Middling value for this important element of spinning value. Deltapine also showed fewer neps in the card web and it produced a slightly smoother yarn.

SUMMING IT ALL UP

You reach these conclusions:

1. The Imperial Valley, capable of producing three bales of Deltapine Smooth Leaf cotton per acre, will stay with this variety. The valley's climate, making it possible to produce high-germination cotton seed free of pink bollworm infestations, could conceivably become the main source of high-quality planting seed for Mississippi-bred cotton, whether it be Deltapine Smooth Leaf, Stoneville, or any other Mid-South type of lint.

2. Arizona, having a variety of Acala 44 that leaves much to be desired in spinning values as compared to Acala 4-42, is likely to go all-out for the high-yielding Mississippi-bred cottons.

3. San Joaquin Valley growers, having established a world-wide market for their Acala 4-42 that commands a high premium over Central belt cotton of comparable grade and staple length, are not likely to shift to a lower-strength variety. Reason for this stand is that San Joaquin grower-owned gins and producer corporations are equipped to insure optimum qualities from Acala 4-42 in the ginning process. They have spared no expenditure to produce qualities demanded by spinners. And no other area has devoted so much time and effort to learning and practicing gin operation procedure that produces maximum returns.

TEXTILE WORLD
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CHEMICAL TREATMENT AND FINISHING

IN THIS SECTION

News of the Month in Textile Chemicals 73

What's New in Dyes and Chemicals 76

What You Should Know About Vat Dyeing Today: Part 1—TEXTILE WORLD begins a new series written by Ormond W. Clark, late of American Cyanamid Co. and one of the outstanding experts in the field of application of vat dyes. In this first installment, you'll get pointers on handling vat-dye pastes, the basic chemistry of vat dyeing, the role of assistants and chemicals, and the preparation of vat-acid solutions 78

New Corduroy Cutters Break Bottleneck—How one plant simplifies the job of cutting corduroy, improves working conditions, and cut costs—all at the same time 90

For more satisfactory carpet shades, the man to see is at Sandoz

Whether your carpet is wool, cotton, or nylon, Sandoz dyes and dyeing formulas can help you offer improved color fastness and levelness. Recent improvements credited to Sandoz technology include the dyeing of wool at the iso-electric point (using Lanasyn dyes and Lyogen SMK) and the barre-free dyeing of filament nylon with Lyogen P and Lyogen SF. For your cotton products, Sandoz provides the fastest-to-light directs (Lumicrease colors) as well as a full line of vat dyes. Sandoz can offer you shade matches completely compatible with all types of carpet backing.

For details and particulars, write, wire or 'phone headquarters: SANDOZ, INC., New York 13; Charlotte 5, N. C.; Cincinnati 26; Hudson, Mass.; Los Angeles 13; Philadelphia 34.

SANDOZ

THINKS AHEAD WITH TEXTILES

SANDOZ

News of the Month in . . .

Textile Chemicals

By ROBERT W. PINAULT, Associate Editor, TEXTILE WORLD

Solvent-Dyeing Methods Are Reaching The Commercial Stage, Swiss Reveal

Wool and nylon can be dyed more quickly and to brighter, faster shades with the aid of benzyl alcohol, according to a report from Geigy, Ltd., Basle, Switzerland.

Dyes of the Irgalan and Polar types produce the best results. The method suggested for dyeing wool is based on using 0.7% of benzyl alcohol based on bath volume plus selected neutral-dyeing premetalized Irgalan colors. Dyeing time is "relatively short" at 90 C. with excellent bath exhaustion.

It is easy to reproduce dyeings by this method, and the material is left in better condition than when handled by long, high temperature methods.

The additional cost of the benzyl alcohol is offset by higher production, and the ability to reuse the dyebath until all color is absorbed.

Another class of colors, the mordant acid types such as Eriochrome Black also works well when benzyl alcohol is used to speed dyeing. Up to 20 dyeings in the same liquor, and a 300% increase in production have been reported with these blacks assisted by benzyl alcohol.

Better washfastness and better coverage of yarn irregularities on nylon are possible with the solvent assist.

Premetalized and acid dyes, applied on the jig, are favored for nylon where good washfastness is needed. To get good cover and fast dyeing, the scoured and heatset nylon is treated at 60 C. with 4% benzyl alcohol (on volume), 2% of 40% acetic acid (on weight of material), and 2% of Irgasol NJ.

The bath is then raised to the boil and the dye is added in equal amounts over six ends. Exhaust is nearly complete in four more ends. The goods may be run another two to four ends to insure good penetration. A rinse at 60 C. completes the dyeing.

Jigs should be covered to maintain dyeing temperature as close to 212 F. as possible.

Binders Hidden in New Nonwoven Fabric

Nonwoven fabrics that are made by a combination of binder and needle-punching techniques are the subject of U. S. Patent 2,970,365 to Morgenstern Fabric Development Corp.

The webs are made by conventional methods, then sprayed with a thin adhesive layer. Next step is to put them through a needle-punching machine that drives a good proportion of the outer layer of fibers below the surface of the web.

Result shows in superior strength and good hand.

By combining two layers and needle-punching from opposite sides, most of the adhesive winds up in the interior of the web. Your choice of adhesives and amount will determine the final hand, which may be stiff or soft according to end-use requirements.

Binders can be based on water-soluble latices or solvent-soluble materials. Binder content is held to a low figure, and for most purposes the binder is kept mostly on the surface of the web.

Now, Anthraquinone Helps Improve Discharge Whites

You can get a better white discharge on polyester-fiber fabrics if you add anthraquinone to the discharge print paste. The effect of the anthraquinone can be increased by the further addition of a hydrotroptic agent such as sodium benzyl sulfanilate to step up the discharge action. A typical formulation is:

200 parts printing hydro
20 parts of 30% anthraquinone paste
30 parts sodium benzyl sulfanilic acid
100 parts 50% zinc oxide paste
50 parts 50% titanium dioxide paste
50 parts egg albumen
550 parts aqueous thickening

After the paste is printed on, the goods are dried and steamed for 5 to 30 minutes at 2 atmospheres pressure, then scoured as usual.

Some plants also add a fluorescent brightener to further enhance the brilliance of the white.

Cyclic Amines Modify Polyester Fibers

You can improve the hand and dyeability of polyester-fiber fabrics by treating the fiber with certain cyclic amines.

Two ways are suggested in a method patented by Farbwerke Hoechst A. G. Expose the fibers to cyclohexamine, pyrrolidone, or piperidine in a steam atmosphere or in a dilute caustic solution.

By controlling the degree of decomposition, you can come up with softer, silkier fabrics that accept dyes more readily.

Acrylonitrile Grafts Reduce Shrinkage, Boost Strength and Dyeability of Fibers

You cut down shrinkage, increase strength, and improve dyeability when you graft acrylonitrile on polyethylene or polypropylene fibers. Dow Chemical Co. does it this way:

The polyolefin fibers are exposed to ozone while they are saturated with or immersed in an inert fluid medium. The ozonization prepares the fibers to start polymerization of vinyl monomers, a reactivity condition that persists for up to a week.

Then the fiber is reacted in a closed vessel with acrylonitrile at 60 to 120 C. and stretched. Tensile strength is increased up to 800% by this process.

In a typical treatment, polyethylene fibers are oriented by stretching them to 6 times their original length to give them a tensile strength of 2,000 psi. Then they are exposed in a gaseous atmosphere of 1% ozone and 99% oxygen for 2 hours at 25 C. and an excess pressure of 0.5 psi.

Next step is to heat the fiber in a closed glass container with acrylonitrile and in the absence of air or oxygen. After 2 hours at 110 C., the filaments show a remarkable change. They now have a composition corresponding to 9.35% of the original polyethylene fiber and 90.65% grafted-on polyacrylonitrile.

Further stretching brings tensile strength up to 17,000 psi.

The inert organic fluids that are used for the initial ozonization can be ethyl alcohol, methylene chloride, chloroform, or carbon tetrachloride. Results of this treatment are similar to those obtained by other radiation-grafting methods.

Here's How to Identify Off-Beat Nylon Fibers

While most nylon fabrics in use in America are based on nylon 6 or nylon 66, occasionally you'll run into nylon 11 (Rilsan) or—rarely—nylon 6 10. You can separate nylon 6 and 66 from the others by soaking the yarn in a 20% aqueous solution of iodine saturated with potassium iodide. After rinsing, nylon 6 and 66 will be stained black, the others are left unstained.

Alkyd Resins Speed Vat-Dye Printing

Here are basic formulations for emulsion-printing methods that can be run at high printing speeds and cut color costs as much as 33% over starch-based pastes.

Resins such as Duraplex A-27 (Rohm & Haas) are typical of the binders favored for the process. This resin is made from 42% phthalic anhydride, 37% cotton seed oil, and 21% of a polyhydric alcohol such as glycerol or ethylene glycol. Alkyd resins modified with soya bean oil can also be used, as can UF, melamine, or epoxy resins.

A working formula is made by mixing 3 parts of a 60% solution of Duraplex A-27 in xylene with 32 parts of Varsol No. 2. This dispersion is emulsified with 65 parts of water to produce a water-in-oil emulsion. Viscosity should be about 1,000 centipoises at 77 F.

The printing paste is made by dispersing the vat pigment in the W/O emulsion.

Fabric printed with the paste is dried on cans and then run in an alkaline reducing liquor that contains 4% caustic, 6% hydro, 0.1% of a wetting agent, and about 1% starch or other thickener.

Flash aging for 10 to 30 seconds at 212 to 290 F. reduces the color and is followed by oxidation in a solution that carries 2% peroxide and 2% acetic acid. The usual soaping completes the process. Du Pont holds patents on the process.

Lactones Show Promise As Dye Carriers

Researchers at Farbwerke Hoechst A.G. find that certain lactones or lactone-forming chemicals make excellent dye carriers for polyester fibers.

Shades come up quickly to deep, level dyeings at temperatures that don't harm wool or polyvinyl alcohol fibers, which may be present in blends with polyester fibers.

Most suitable lactones are only sparingly soluble in water and include gamma-phenyl and gamma butyrolactone, 3-, 5-, or 6-methylphthalide, 3-methyl-7-hydroxyphthalide, 4-methylcumarin, and 4:6-dimethylcumarin.

You can also use the hydroxy acid on which the lactone is based in the form of its water-soluble salt. In these cases, the addition of an acid-hydrolyzing salt like ammonium sulfate or a hydrolyzable ester of tartaric acid to the dyebath is necessary. Under these conditions, the hydroxy acid salt is gradually converted to a lactone.

A dyeing process based on the lactone carrier uses 2½% of the lactone of 2-hydroxynaphthalene-1-beta propionic acid, 0.3 grams per liter of glycollic acid, 2 grams per liter of a dye dispersant, and the requisite dye.

Dyeing starts at 60 C., and the temperature is raised to 98 C. After one hour, the bath should be nearly exhausted. The process carries British Patent 860,441.

Polyamide Finishes Cut Wool Shrinkage

"Highly favorable results" is the gist of a report on treating wool fabrics with polyamide resins to reduce felting shrinkage.

Workers at the U. S. Dept. of Agriculture, Western Utilization Research and Development Div., Albany, Calif., developed the process. Described as an interfacial polymerization, the finish is firmly fixed to the wool fiber. No curing step is necessary to produce permanent results.

Applying the Basic Belfast Finish: What's Behind Its Success Today

The successful new Belfast finish, patented by Deering Milliken Research Corp. is based on a crosslinking action brought about by chlorohydrin or a similar chemical. Catalysis is provided by caustic soda or quaternary ammonium hydroxide.

Typical crosslinkers include 2:3 dichloro-1-propanol, 1:3-dichloro-2-propanol, and epichlorhydrin.

One method of application is to pass the goods over a stainless steel roller so that good contact is made. The roller is furnished from a pad box below with a 30-70 mixture of 1:3-dichloro-2-propanol and 2:3-dichloro-1-propanol. A second roller (of rubber) is furnished with a 10% solution of caustic soda plus a small amount of wetting agent.

Pressures and speeds are adjusted so that the cloth picks up about 15% of the dichlorohydrin mixture and about 70% of the caustic solution, based on the weight of the fabric.

The goods are tentered, batched, and wrapped with polyethylene to conserve moisture. They are stored at room temperature for 12 hours.

After this reaction period, the fabric is washed thoroughly, squeezed out, and dried.

The treatment provides excellent wet-crease resistance, is permanent to laundering, and will not retain chlorine.

The process can be adapted to yarns to produce crepe effects or can be used to produce permanent pleats in cottons. For viscose, caustic potash is usually substituted for caustic soda.

Modified Flameproofer Retains More Strength

Strength losses in cotton that has been flameproofed with urea phosphate compounds can be minimized if the formula is modified according to British Patent 856,360 to E. L. Donohue, an American.

Pyridine, or a substituted pyridine such as methyl or ethyl pyridine, is added to catalyze the reaction of the cellulose with the urea phosphate. A swelling agent such as Cellosolve also aids in opening the fibers and improving the solubility of the pyridine.

A typical flameproofing formula for cotton is thus:

25 parts urea phosphate
7.0 parts Cellosolve
0.2 parts bone oil (a mixture of pyridines)
0.3 parts sodium alkylaryl sulfonate
65.0 parts water

Pad the goods to 75% to 100% pickup, and dry at 200 F. Follow by curing at 300 to 350 F. for 3 minutes. Wash thoroughly.

Fabric treated in this way should show little or no strength loss and no appreciable after-flaming under standard testing conditions (Vertical Bunsen Test). Afterglow is 4 to 5 seconds and char length is 3.2 inches.

Phosphate is best made with equimolar proportions of urea and phosphoric acid.

Corn-Fraction Separation Reaches Practical Basis

Fractionating corn starch to separate pure amylose and amylopectin is now possible on a semi-commercial scale.

A. E. Staley, Board Chairman of A. E. Staley Mfg. Co., Decatur, Ill., says his company has completed a pilot plant for this purpose. Present varieties of corn can be processed by the plant by the new methods developed by Staley.

The amylose fraction of corn starch is normally about 25%. Amylose has considerable potential in the fields of films, fibers, and coatings.

Did you know . . .

. . . that you can differentiate between silicone-base and other water repellent finishes by using pressure-sensitive tape? Just apply a strip of Scotch or similar tape to the goods in question. If they have been finished with a silicone water repellent the tape won't stick. Adhesion is good on Quarpel-, Zelan-, or Primenit-type finishes. The test was developed by C. J. Connor, associate chemist at the Cotton Chemical Laboratory of U. S. Department of Agriculture, Southern Utilization Research and Development Div., New Orleans, La.

■

. . . that in applying vat dyes in pigment form, an alkaline bath is best? Dyers find that at pH 8 or better, there is less tendency for the pigment to migrate.

■

. . .that reactive dyes, dyed to very heavy concentration, reduce the tear strength and increase crease-recovery properties of cellulosic fibers? Investigations by A. G. Chitale and A. Y. Kulkarni of the Ahmedabad Textile Industry Research Assn., Ahmedabad, India, show that the probable reaction between cellulose and the cold-dyeing reactive dyes is one of crosslinking, which would account for the loss of strength and improved crease recovery. There is a loss in tear strength in all dyeings, but the hot-dyeing reactive dyes do not affect cotton more than conventional dyes. Rayon suffers a 25% strength loss at 8.7% concentration of the hot-dyeing reactive dye.

The researchers point out that such results with reactive dyes of either type are only obtained at dye concentrations much higher than are usually used in commercial applications.

■

. . . that Epsom salts can be a help in stripping down dyed goods? Amount to use depends on the stripping agent and how far back the stripping operation is carried.

What's New In Dyes and Chemicals

Disperse Dyes

Amacron dyes are now available for polyester fibers. The dyes work well in cross dyeing polyester and cellulosic blends because they leave the cellulosic unstained.

The line of 14 colors is bright and is fast to light, washing, crocking, sublimation, and perspiration.

Because the dyes possess good fastness to sublimation, you may apply the colors by the heat-cure method and lose none of their brilliance. For pressure dyeing, you can apply the dyes without carriers. The dyes give excellent speck-free prints when you roll or screen print. Koppers Co., Inc. **(Circle D-1 on Reader-Service Card)**

Intermediate

Metaphenylene diamine . . . is offered as a stable, light-colored product free of ammoniacal odor and suitable for developing dyestuffs or as a curing agent for epoxy resins. It is produced at 99.3% strength minimum. National Aniline Div., Allied Chemical Corp. **(Circle D-2 on Reader-Service Card)**

Aftertreated Direct Dye

Cuprofix Black C-FBL Pat. . . . produces bluish-black shades on cellulosic fibers. The color is homogeneous and has good fastness to light and resin finishing. It is highly soluble, and is thus well suited to pad dyeing or dyeing by the pad-roll system. The dye covers dead cotton well, and dyes level on barré viscose. Acetate is reserved. Applications include dyeing apparel of all types, as well as threads, jute, hemp, and sisal fibers. Sandoz, Inc. **(Circle D-3 on Reader-Service Card)**

Cationic Dyes

Dekatyl Blue G . . . is especially useful in producing lightfast navy and black shades on Dacron Types 62 and 64. Application at pH 3 to 5 is recommended for best shade reproduction. The dye can be applied with carriers or by pressure dyeing.

Dekatyl Violet B . . . produces deep violet shades on Dacron 62 and 64 or other fibers that take cationic dyes. It is recommended for blends of polyester fibers and wool. Application is by carrier or pressure methods. Lightfastness is excellent. E. I. du Pont de Nemours & Co., Inc. **(Circle D-4 on Reader-Service Card)**

Leveling Agent

Lyogen WD . . . produces level dyeings on wool with acid, acid-milling, and chrome dyes. Lanasyn colors, normally applied from a neutral bath, can now be dyed perfectly level with phosphoric or acetic acid in the presence of the new product.

The acid pH gives brilliance to wool dyeings because yellowing of the fiber is avoided.

The leveling agent reduces the tendency of chrome dyes to produce skittery dyeings and also helps in dyeing mixtures of neutral- and weakly-acid dyeing colors to wool. Best pH is 4 to 5.

The retarding and leveling action produced by the product also helps in dyeing silk or nylon with acid-milling colors. Sandoz, Inc. **(Circle D-5 on Reader-Service Card)**

Polyester Dyes

Eastman Polyester Brilliant Red FFBL . . . is a blue shade of red that is the brightest red in Eastman's line of dyes for polyester fibers. It has excellent lightfastness and very good fastness to washing and perspiration. Used in dyeing wool and polyester blends, it stains the wool only slightly, even in heavy shades.

Eastman Polyester Dark Brown GL . . . was developed particularly for men's wear. This dye produces neutral tans to full dark brown shades that have excellent fastness to light, washing, crocking, and perspiration. Dark shades can be produced economically because of the dye's very faborable build-up.

Eastman Polyester Brown 3 RL . . . is a strong orange shade of brown that stains wool to a lesser degree than do most orange dyes. Its use as a replacement for oranges, red, or yellows in achieving deep brown tones on wool and polyester blends is therefore suggested. In lighter shades, it also contributes excellent lightfastness.

Eastman Polyester Navy Blue RL . . . provides exceptionally good color value in obtaining full bright shades of navy blue. Its build-up characteristics are excellent, as is its fastness to light, washing, crocking, and perspiration. Eastman Chemical Products, Inc. **(Circle D-6 on Reader-Service Card)**

Basic Dye

Eastacryl Blue 5GL . . . is a cationic dye for acrylic fibers. This new Eastman dye provides the means of achieving brilliant green shade of blue that do not flare red under artificial light. It exhibits excellent wet fastness and lightfastness. It builds up well in heavy shades and is compatible with other basic dyes. Eastman Chemical Products, Inc. **(CircleD-7 on Reader-Service Card)**

Printing Resin

Rhoplex B-27 . . . is an acrylic polymer supplied as a 45%-solids emulsion and designed particularly for pigment binding.

Its outstanding features are improved washfastness, freedom from discoloration, and superior resistance to cyclic aging.

The emulsion has good mechanical stability and can be used in either water-in-oil or oil-in-water printing systems for both screen- and roller-printing formulations.

The product is also suggested as a binder for nonwoven fabrics where resistance to heat and ultraviolet rays are important. Rohm & Haas Co. **(Circle D-8 on Reader-Service Card)**

A staple in textile manufacturing, NEKAL NF is an anionic liquid known for high quality and all-round efficiency as a wetting and penetrating agent. The news is: *the wetting ability of Nekal NF has been stepped up 50%* with no loss of efficiency in these other important directions...

- *chemical stability to alkalis, acids, hard water, etc.*
- *compatibility with the various dyestuffs*
- *level dyeing characteristics*
- *low foaming properties*

Nekal NF, an alkyl naphthalene sulfonate, may be used with confidence in continuous padding and long-liquor dyeing with vat, sulfur, and direct colors...also in package, beam, hosiery, jig, and other types of dyeing operations on various yarns and fabric constructions.

For further information and samples, get in touch with any General Dyestuff Company office.

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A DIVISION OF

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Nekal wetting agents manufactured by General Aniline & Film Corp. are sold outside the United States, by distributors all over the world, under the trademark "Humifen."●

A TEXTILE WORLD REFRESHER

What You Should Know About

Here's the first installment of an important new TEXTILE WORLD *series that you'll be seeing in the coming months. This one deals with four fundamentals—handling vat-dye pastes, basic chemistry of vat dyeing, role of assistants and chemicals, and preparing vat-acid solutions.*

VAT DYES are growing in importance every day. Their application is of prime importance in coloring of all textiles, especially if you want good color fastness.

What must you know to apply these dyes? A great deal. You should have a grasp of the essentials of handling vat-dye pastes, the basic chemistry of vat dyeing, the role of assistants and chemicals, and preparing vat-acid solutions. Here's a run-down on each of these essential aspects of vat-dyeing today:

HANDLING DYE PASTES

A good system of storing, sampling, and handling vat dye pastes is necessary to consistent results. If you want to check color value, you ought to sample the freshly opened drum only after thorough stirring. And it should be tightly resealed after sampling.

Watch out for freezing. Dispersions often break if frozen, and large agglomerates of dye particles form, which may produce specks. Also, beware of heat. Excessively hot storage areas speed evaporation.

In selecting a vat dye paste for use, be sure you have the right container. Labels should be readable during the container's use period.

Be sure the container is not leaking and that it hasn't been damaged in transit. When you open it, preserve the gasket so that the lid can be refitted with a good seal.

If the drum has been in the mill warehouse or drug room an unusually long time, inspect the contents carefully when it is first opened to make sure the paste is in the proper condition. Do not attempt to adjust a vat paste by adding a little of this or that, as it may break the dispersion or cause other troubles.

Stir the paste with a clean paddle to insure a uniform, fluid texture. Be particularly careful to scrape the bottom of the drum lightly with the end of the paddle. If the container has a coating or lining, be careful not to break the surface. Dip out the required amount of dye with a clean dipper.

After the desired amount of dye has been removed, squeegee down the sides of the drum to the level of the dye paste. Replace the lid and seal tightly. Rinse thoroughly all scoops, dippers, and paddles that were used in the operation. This will prevent contamination of the next color weighing operation by dried-out dye.

If dried particles of dye are observed at any time during these operations, they should be removed and thrown to waste as it is very difficult, perhaps impossible, to redisperse and to reduce dye particles that have dried and hardened. Ordinarily, there should not be any dried particles or flakes. Their presence indicates improper storage conditions, imperfect sealing of containers, failure to squeegee lids and container walls.

COMPARING GROUPS

Vat dyes are customarily divided into two groups, loosely called the indigoid group and the anthraquinonoid group.

Anthraquinonoid group — This group exhibits superior fastness

By O. W. CLARK
Late of American Cyanamid Co.
New York City

About the Author

Ormond W. Clark was graduated from M.I.T. in 1921 with a B. S. in electrochemical engineering. He received his Master's Degree in Chemistry from Columbia University in 1930.

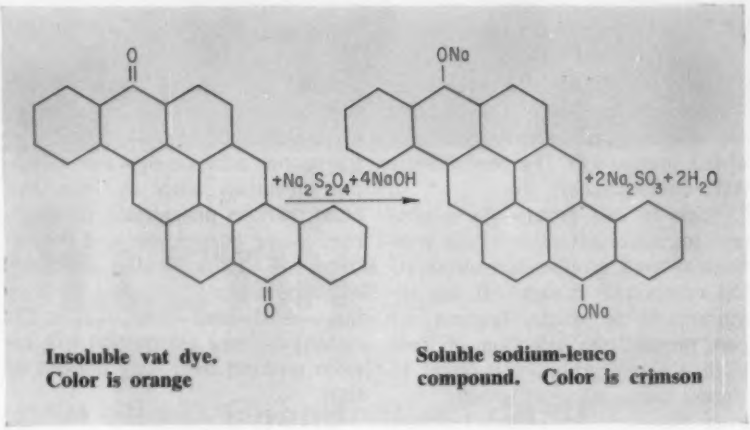
In his 20-year association with American Cyanamid Co., his work lay largely in the field of the application of vat dyes. His broad knowledge of the subject ranged from creative work in Cyanamid's laboratories to extensive mill-application operations. Mr. Clark was author of many papers and articles about vat dye application. At his death in August, 1959, Mr. Clark left a rich legacy of authoritative information.

TEXTILE WORLD here presents a prepublication condensation of Mr. Clark's collected works on vat dyeing, which American Cyanamid Co. will publish in book form in the future.

Vat Dyeing Today—Part 1

properties, generally is distinguished by excellent fastness to light and is the most widely used group.

Indigoid group—A few indigoid derivatives are outstanding in brilliancy of shade. This attribute, together with the excellent fastness to washing and bleaching of some of these dyes, counterbalances the deficiency of poor fastness to light for many applications. Occasionally, a lower cost for indigoid dyes accounts for their use, and their inferior fastness in certain respects is deliberately disregarded.



Insoluble vat dye. Color is orange

Soluble sodium-leuco compound. Color is crimson

HOW THE PROCESS WORKS

Vat dyes are insoluble in water. They are converted into a suitable condition for dyeing by reducing or vatting them in an alkaline-reducing medium. In commercial practice, this medium is usually an aqueous solution of sodium hydroxide and sodium hydrosulfite. In practice, these chemicals are usually called caustic soda or caustic. Hydrosulfite is called hydro. Sodium hydrosulfite is a trade designation. The correct chemical name is sodium dithionite.

A vat dye contains at least one keto group $>C=O$, which reacts with the caustic and hydro to form the water-soluble sodium enolate or sodium-leuco compound, $>C-O-Na$. For example, with Vat Orange 9 (C.I. No. 59,700), the reaction follows the formula above.

ROLE OF LEUCO DYES

The sodium-leuco compound of a vat dye exhibits definite affinity for cotton and certain other textile fibers. After a textile fiber has adsorbed this leuco dye from a dye bath, the dyed material is subjected to treatments that oxidize the leuco dye and neutralize the alkali, thus converting the dye back to the original keto form or water-insoluble pigment which is trapped within the fiber structure. To develop a truly stable shade and to produce a dyeing with maximum fastness properties, it's customary to subject the dyed material to a further final aftertreatment in a hot detergent.

FIBER TRAPS DYE

Studies of the mechanism of the vat dyeing process indicate that the cellulose molecules are arranged in an orderly or regular manner in certain portions of the cotton fiber. These are the crystallites or micelles. These crystallites are not discrete. They merge gradually into a disordered or amorphous region of the fiber.

One single-chain molecule may pass through and be a part of two or more crystallites.

When the cellulose fiber is placed in water, osmotic pressure causes the chains in the amorphous regions to move apart and thus penetration of the dye ions becomes possible. As the vat-dye ions diffuse into the fiber they are oriented by, and coordinately bonded to, the cellulose molecules by hydrogen bonds and van der Waals forces.

As a general rule, the oxidized form of the vat dye is not bound in this manner. It is not retained within the cellulose by virtue of any special affinity or type of molecular combination, but merely because of its extreme insolubility in water and the fact that it is mechanically trapped within the fiber molecule. The oxidized vat-dye particles have considerable independent freedom of action within the fiber.

GROUPING VAT DYES

Because each individual vat dye is a specific chemical compound, it is natural that a single set of reduction conditions or a single set of dyeing conditions cannot be specified for the entire group of vat dyes, nor one set for the indigoid and another set for the anthraquinonoid groups.

Early in the history of vat dyes, it was found feasible and it became customary, for practical purposes, to divide the entire range of vat dyes into four groups. These groups were based on the dyeing conditions that yield the best shade and strength when cotton yarn in the form of skeins is dyed in a yarn-to-bath ratio of 1:20, by weight. The distinguishing factors between the first three groups are dyeing temperature, caustic soda concentration, and the concentration of salt. The fourth group contains those dyes that require special treatment for the individual members.

. . . Turn the page

HOW 4 GROUPS OF VAT DYES BEHAVE

Group	Dyeing Temperature	Caustic Soda (oz. per gal.)	Common Salt (oz. per gal.)
I	120 to 140 F.	0.25 to 1.50	None
II	100 to 120 F.	0.16 to 0.50	0.50 to 4.0
III	70 to 80 F.	0.16 to 0.50	1.0 to 8.0
IV	Dyes that require individual and special treatment		

Groups I, II, III, IV correspond respectively to Groups IN, IK, and IW and special stock-vat methods of the prewar I.G. (Farbenindustrie Atkiengesellschaft).

Stick to one group—As a general rule, it is advisable to use dyes from a single group when formulating compound shades. If the requirements of shade, fastness, or cost prevent the selection of dyes from a single group, you ought to choose from adjacent groups.

In the last few years, various improved batch and continuous methods of applying vat dyes have come along. As a result, the experienced vat dyer now has greater latitude. Today he can select dyes with greater emphasis on shade, fastness, and cost, and with less regard for group classification and exact similarity of dyeing behavior.

Water: important factor—It's impossible to overemphasize the part that water plays in dyeing. The solubility of dyes, the levelness of dyeings, the accuracy with which formulas reproduce from dye lot to dye lot, and the shade and fastness of dyeings are often greatly affected by the quality of water.

Baffling variations in the working properties and shade of specific formulas can often be traced—through careful observation and analysis—to corresponding and unanticipated variations in the character of the water supply.

Trouble may be caused by the leaching-out of unusual amounts of iron, manganese, or tannic acid from mineral or vegetable matter that may be present in ponds or river beds. The presence of high amounts of calcium or magnesium, or variations in pH can also cause difficulty. Variations in the composition of effluents that enter water supplies from upstream locations are also a potent source of trouble.

Don't assume that the mere passage of water through a zeolite or an ion-exchange resin softener, or the routine addition of water-softening chemicals such as lime and alum, various phosphates, or ethylenediamine tetra-acetic acid derivatives will automatically and consistently render water ideal for dyeing. And don't think that water conditions once established will remain uniform over long periods of time.

Nor should you assume that water quality established at the supply source will be maintained at dye bath temperatures and in the presence of dyeing assistants.

Treating water—When polyvalent-cation content, or hardness, exceeds 2 grains per gallon or 34 parts per million, there's a definite need to remove or sequester the undesirable cations. Even when the polyvalent-metal-ion content is lower, there are advantages from inactivating them. The sodium-leuco compounds of many vat dyes react with polyvalent-metal-ions such as calcium, magnesium, and aluminum, to form compounds with less affinity for the fiber or to cause precipitation of dye.

The results can be unlevel dyeing, lowered color yield, duller shades, and poor fastness to crocking and to washing. Some of the indanthrone vat blues and the pyranthrone vat oranges are particularly sensitive to hard water.

The obvious need for clean water in dyeing operations does not require additional discussion of the value of a filtration treatment for water with suspended impurities.

FIGURING ASSISTANTS

It's better practice to express quantities of dyeing assistants in terms of concentration in the dye bath so that they are independent of the liquor ratio, rather than as a percentage on the weight of the material, whereby concentration of the assistant varies with the liquor ratio.

When quantities are expressed in terms of percentage on the weight of material, the liquor ratio should always be stated. Some precautions in the selection and use of certain dyeing assistants for use in vat dyeing are discussed in the following paragraphs.

Caustic Soda—This chemical is supplied by manufacturers in a high-grade, well-standardized form, and the chief precaution is to keep partly used drums tightly sealed so that carbonation does not occur by reaction with atmospheric carbon dioxide.

When regenerated caustic soda is supplied to the dyehouse after original use in other operations such as mercerizing, then, in addition to evaporation, it should pass through suitable clarification steps to remove iron, lint, cotton waxes, and other impurities it may have acquired that may interfere with satisfactory dyeing processes.

Commercial 50% liquid caustic soda contains 6¼ pounds of NaOH per gallon.

Soda Ash—This assistant is ordinarily used directly from the manufacturer's container and is satisfactory as supplied.

Sodium Sulfide—For almost every dyehouse purpose, the highly refined light-tan chips or flakes are almost exclusively used and are quite satisfactory. They have replaced the red flakes or chips that were formerly used and which contained an excessive amount of iron and other mineral impurities.

Crystalline sodium sulfide is rarely used today. Its slightly greater purity does not contribute a significant improvement to the quality of a practical dyeing. Sodium sulfide is often used together with sodium hydrosulfite because, under some conditions, it permits lower hydrosulfite usage or gives protection against surface oxidation.

Sodium Hydrosulfite—This is the commercial name for sodium dithionite, anhydrous $Na_2S_2O_4$. The purchase, storage, and use of this chemical merit extra attention. First, to secure material of high strength and purity and in the proper physi-

BULLETIN:

On August 27, 1960, Shell Chemical originated tank truck shipments of hydrogen peroxide in the South to save your company money regardless of its size.

If you are presently buying in drums, read how you can eliminate drum deposits and take advantage of low bulk prices on quantities of 1000 gallons or more.

If you're already buying in bulk, read how Shell Chemical's over-the-road delivery can lower your inventory costs and give you faster service at no increase in price.

THANKS to Shell Chemical, you can now buy hydrogen peroxide throughout the South at *tank car prices* and *over-the-road* convenience.

How drum users save

If you are presently buying 35% or 50% hydrogen peroxide in drums, you can save two ways.

Let's assume your current consumption is 40 drums a month of 35%. The immediate benefit from Shell's tank truck delivery is a $1600.00 increase in working capital by eliminating drum deposits. At the same time you will do away with the bookkeeping, handling and general nuisance of returning drums.

Major benefit: $4500 a year

But the major benefit, of course, is to give you low bulk prices *even if you don't have a railroad siding.* You can buy in quantities of as low as 1000 gallons a shipment. Again using 40 drums of 35% a month, your cash savings can amount to over $4500 a year. At this rate you could pay for excellent storage facilities in 8 months. Everything after that would be pure gravy.

How present bulk users save

Now let's assume you're already buying in bulk. What can Shell's tank truck delivery do for you?

First, it can free 1500 gallons of working capital every time you buy. Instead of taking 4000 gallons at a time, you can take 2500 *at the same low price.* Or you can take as little as 1000 at a very modest increase. Figure for yourself what this can mean in the course of a year.

Every part of the South

The second advantage to current bulk users is faster delivery. Even the most remote part of the South is within two days' drive from Shell Chemical's hydrogen peroxide plant in Norco, Louisiana.

Storage help from Shell

If you do not have storage facilities, you can buy the best on the market for about $3,000. Shell will help you with every step of the installation. That's part of the original tank truck plan as Shell conceived it.

For complete information, contact Shell Chemical's district office in Houston (CApital 2-1181) or Atlanta (JAckson 5-7621). Call today. The tank trucks are rolling. Let them roll your way with savings.

A Bulletin from

Shell Chemical Company

SHELL

Industrial Chemicals Division
110 West 51 Street, New York 20, N.Y.

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cal form. Second, to protect the material from unnecessary decomposition. And third, to insure maximum effective reducing power.

First-quality, fresh material contains 90 to 94% $Na_2S_2O_4$. Accurate analysis of sodium hydrosulfite requires exact adherence to the specified technique. The content of sodium thiosulfate, present as an impurity, should be very low because under high-temperature conditions of use, sodium thiosulfate accelerates the rate of decomposition of sodium hydrosulfite. When used in dry-feeding equipment, a very fine but dustless, nonclogging, quick-dissolving product is preferable.

Guard up on fire—Sodium hydrosulfite should be stored in a cool, dry place in tightly sealed containers. Under unfavorable conditions, decomposition is rapid. When exposed to air, the strength rapidly decreases from 92% to about 70%. Decomposition is slower thereafter, probably because of the stabilizing effect of a decomposition product, sodium sulfite. Moisture causes very rapid decomposition resulting in an exothermic reaction that liberates 10,500 calories of heat per gram mol.

As a result, the material may burst into flames or large quantities of noxious sulfur dioxide may be liberated into the atmosphere. In either event, a quick and hazardous effort is required to remove the affected container to an outside area. Therefore, it's costly as well as dangerous to permit uncovered containers of sodium hydrosulfite to be stored in the dyehouse.

Sodium hydrosulfite is very unstable in water and decomposes according to the following reactions:

The sodium hydrosulfite reacts with water:

$2Na_2S_2O_4$	+	$2H_2O$	→
Sodium hydrosulfite		Water anhydride	
$2NaHSO_2$	→	$2NaHSO_3$	
Sodium sulfoxylate		Sodium bisulfite	

The sodium bisulfite gradually oxidizes to sodium bisulfate:

$2NaHSO_3$	+	O_2	→	$2NaHSO_4$
Sodium bisulfite		Dissolved oxygen		Sodium bisulfate

The acidity resulting from the decomposition products rapidly causes complete destruction of the sodium hydrosulfite.

When sodium hydrosulfite is added to a solution containing sufficient caustic soda and the temperature is sufficiently low, satisfactory stability exists for practical dyeing requirements. At 68 F., it is soluble to the extent of about 20% or about 25 ounces per gallon. If the solution contains 1.5 ounces of caustic soda, the hydrosulfite shows good stability for two days at 68 F. At 140 F., the solubility is about 28 ounces per gallon. Stability is much poorer.

In the presence of caustic soda and when reducing a vat dye, sodium hydrosulfite reacts like this:

$Na_2S_2O_4$	+	$2NaOH$	→
Sodium hydrosulfite anhydride		Caustic soda	
2(H)	+	$2Na_2SO_3$	
Nascent hydrogen		Sodium sulfite	

174 is the molecular weight of $Na_2S_2O_4$

40 is the molecular weight of NaOH

From the above equation, it is evident that 2 moles of NaOH are required for each mole of $Na_2S_2O_4$—a ratio of 174:80. Because commercial hydro is about 92% $Na_2S_2O_4$, the stoichiometric ratio of sodium hydrosulfite to caustic soda is:

$$\frac{174 \times 0.92}{80} = 2.0$$

A greater ratio of sodium hydrosulfite to caustic soda results in rapid lowering of the pH of the solution as acidic decomposition products form and accelerate the decomposition of the sodium hydrosulfite. Therefore, in practice the amount of sodium hydrosulfite should not exceed twice the amount of caustic soda.

Lost power—When you prepare stock solutions or when you add relatively large amounts to a dye bath, the addition should be made slowly and with rapid stirring. Try to add the hydrosulfite at the rate at which it dissolves. Otherwise you'll lose much of the effective reducing power.

Even when hydrosulfite is added carefully under laboratory conditions, about 10% of the effective reducing power is easily lost. Cases have been noted in dyehouse practice where a solution to which 4 ounces per gallon have been added rapidly showed only 2 ounces per gallon on titration—a 50% loss of effective reducing power.

WATER SOFTENING AGENTS

When a water supply is not presoftened, you can use sodium tetraphosphate, sodium hexametaphosphate, sodium polyphosphate, tetrasodium pyrophosphate, derivatives of ethylenediamine tetra-acetic acid, or other suitable chemicals to soften the water through their sequestering effect on certain polyvalent metal cations. Occasionally you'll have to add such a chemical to a bath prepared with soft water in order to remove polyvalent metal cations leaching out of other chemicals. Some of the phosphates decompose at high temperatures and may form a gelatinous precipitate or a white deposit, whereas ethylenediamine tetra-acetic acid derivatives are stable at the boil.

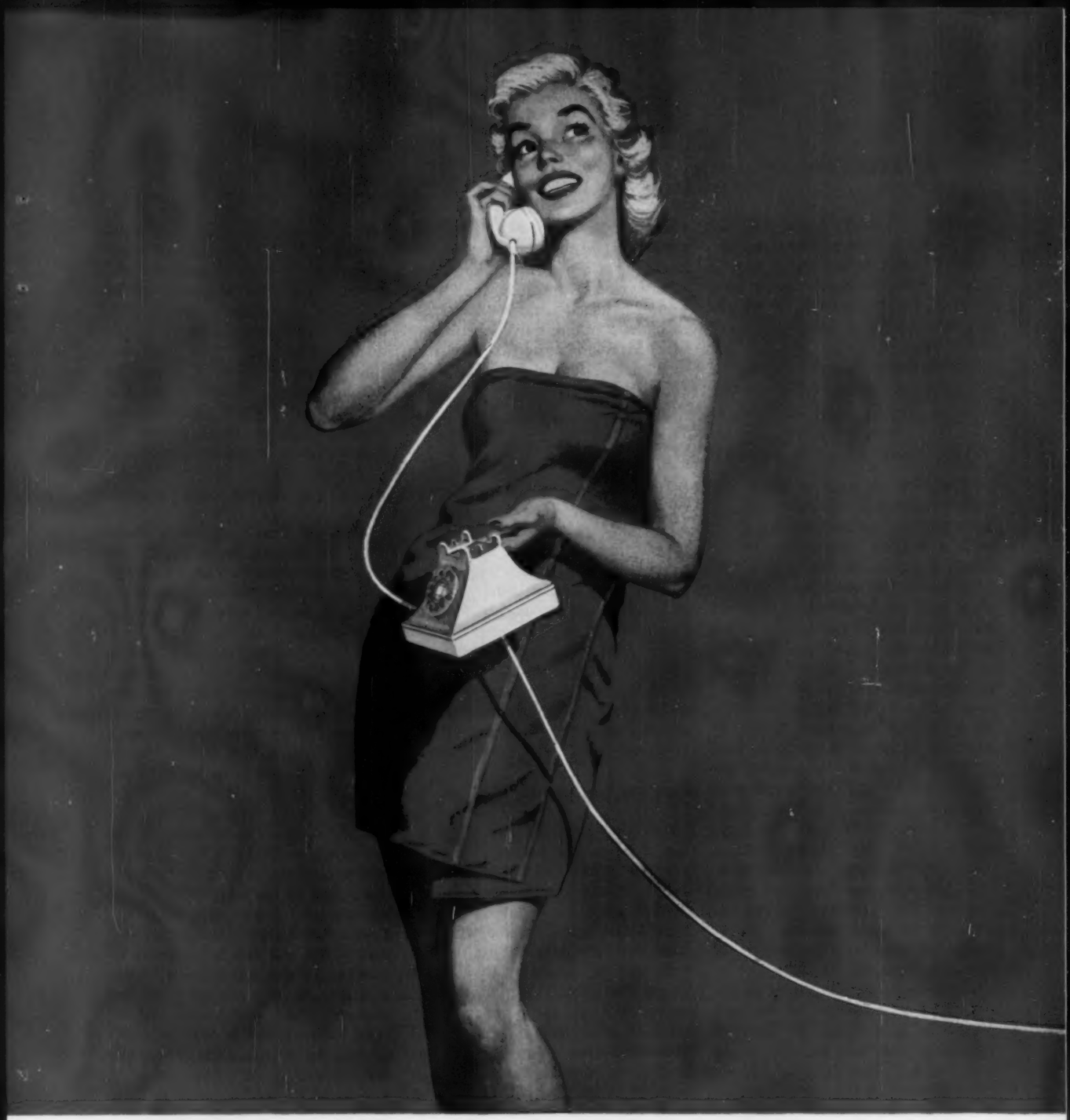
Wetting, Dispersing, Scouring Agents—Dyeing assistants in wide variety are available. Many of them have special advantages under certain conditions, but don't choose haphazardly. Careful tests of efficiency and money value under practical plant conditions should furnish the criterion for the selection. Textile chemicals manufacturers usually are glad to furnish technical field service to demonstrate the correct use of products that do these essential jobs.

USING LEVELING AGENTS

Leveling or retarding agents exist in wide variety. But those most commonly found in American dyehouses are glue, lignin sulfonate, and certain proprietary products. These materials form a loose combination with part of the vat-dye molecules in solution. As free dye is absorbed by the fiber, more dye is set free from the combination. The total effect is to maintain a reservoir of dye that eventually can reach and dye to equilibrium the less accessible portions of a dye lot.

Leveling agents vary in their

. . . Turn the page



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effect on specific dyes and their use and choice should be based on laboratory trials of efficacy with a specific dye formula followed by a cautious plant trial. Use of a leveling agent usually causes a lower color-yield.

Antifoaming Agents—Antifoaming agents are useful adjuncts to certain vat dyeing processes. Excessive foam can cause separation of dispersed dye in pigment padding procedures and can promote the formation of oxidized scum at the surface of baths containing dye-leuco. Popular antifoaming agents are octyl alcohol and formulations based on silicones.

HOW TO REDUCE VAT DYES

The table on page 86 gives suitable proportions of water, caustic soda, and sodium hydrosulfite, along with a suitable temperature of reduction, for the routine preparation of a number of stock vats. Adherence to these conditions will insure the formation of satisfactory leuco solutions and will prevent incomplete solution, decomposition, or precipitation of dye. More highly concentrated stock vat solutions can be made, but very exact control of chemical concentrations and temperature is usually necessary, and the period of complete stability is quite short—dye will decompose.

Vat dyes in reduced form are affected by water purity, caustic, and other chemical concentrations, plus temperature, time, and other factors. Stock solutions should not be kept for long periods. Other factors should be standardized to insure reproducible results.

Instrumental measurement of the pH and leuco potential of the bath assists in controlling the state of reduction and has recently come into limited, practical use. However, it does not remove the need for supplementary titration control.

TAKE AN EXAMPLE

Disperse the dry vat dye powders in water at about 120 F. Strew powder slowly into the water with rapid stirring to prevent caking. Use about 10 gallons of water per 5 pounds of dye.

Then bring dye dispersion to the specified volume and to the specified temperature. The necessary amount of caustic soda is added (see table on page 86) and is followed by the hydro. During reduction, which may require from 30 seconds to 20 minutes, stir the bath occasionally and hold the temperature constant. Vat dyes usually reduce in 5 minutes or less at temperatures of 140 F., or higher.

The leuco solution should be perfectly clear and show a typical color for the specific dye. The condition of the solution is inspected by viewing a pipette sample with a 10-power hand magnifying glass.

DYEBATH REDUCTION

Many vat dyes, especially the indigoid types, can be reduced satisfactorily in the full volume of the dye bath, using the same concentrations of caustic soda and sodium hydrosulfite and the same temperatures that are required for dyeing.

It may be necessary to allow a longer time for reduction than is necessary in the more concentrated chemical conditions of a stock vat. This procedure is convenient when limitations of space, personnel, or equipment make reduction in a stock vat difficult, and when the dye formula can be reduced by relatively low chemical concentrations.

When a compound formula requires dyes from different groups, or when the reduction conditions for the individual dyes vary widely, it is advisable, although not always necessary, to reduce them in separate stock vats and to add the individual stock vats to the dye bath.

A dispersion of the hydrogen leuco compound of a vat dye is called a vat-acid dispersion (or more often a vat-acid). It is formed from a solution of the sodium leuco compound by the addition of sufficient acetic acid to give a pH of 4.5 to 5.5. When properly conducted in the presence of a suitable dispersing agent and with rapid stirring, a fine, uniform dispersion of the vat-acid will form. When it is freshly made, its use avoids dyeing troubles such as those caused by agglomeration or dried-out particles.

PROBLEM WITH DISPERSION

Such problems sometimes occur with commercial nonreduced vat dispersions when they are in storage several months between manufacture and use, or when they are improperly cared for.

If, because of machine breakdowns or other causes, a vat-acid dispersion must be stored for several hours before use, it is advisable to add ¼ ounce or ½ ounce of hydro per gallon to the dispersion to maintain it in good reduction. If possible, it should be restrained just before use. The vat-acid lacks appreciable affinity for cellulose fibers. The vat-acid can be restored to the sodium leuco compound by the addition of alkali, accompanied if necessary by hydro.

Leuco solubility—The concentration of dye that can be prepared as a vat-acid dispersion depends fundamentally on the solubility of the sodium leuco compound, which must be prepared as the first step in making a vat-acid dispersion. But, sometimes the concentration of a vat-acid dispersion must be kept considerably below the figure set by the solubility of the sodium leuco compound or the dispersion will not possess satisfactory working properties. Follow manufacturers' recommendations.

Reduce the vat dye by the specified procedure. Add the sodium leuco solution with rapid stirring to a solution containing sufficient acetic acid to give a resultant pH of 4.5 to 5.5. When the operation is carried out in this order, the danger of forming undesired reaction prod-

X-Link

HAND BUILDER PIGMENT BINDER

NONWOVEN BINDER

NEW CROSS LINKING VINYL RESIN

X-LINK is news in textiles! It is a cross-linking, self-reactive vinyl resin that makes the addition of thermo-setting resins optional. A longer lasting bond to fabrics and fibers results.

FOR WASH 'N WEAR AND OTHER APPAREL OR INDUSTRIAL FINISHES. X-Link is clear and colorless. Builds a fuller, more lasting hand. Improves resistance to water and dry cleaning solvents.

FOR NONWOVENS. X-Link increases flexibility as well as tear and tensile strengths. Gives a pleasing hand and drape.

FOR PIGMENT PRINTING. X-Link improves wash fastness, dry cleanability and resistance to crocking.

X-LINK promises important quality extras for your fabrics. Why not learn more about it? Write or call your nearest National office.

National RESINS

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CIRCLE 85 ON READER SERVICE CARD 85

ucts is eliminated. However, in practice, for the sake of convenience and usually with satisfactory results, the acid solution is frequently added to the sodium-leuco solution.

The presence of a suitable dispersing agent is a vital factor in the preparation of a vat-acid dispersion with satisfactory working properties. The sodium salt of a sulfonated naphthalene-formaldehyde condensate is sold under various trade names such as Tamol and Blancol. These compounds and also various synthetic detergents such as Decceresol Wetting Agent P Special, are used as dispersants in the preparation of vat-acid dispersions. Too much acid causes the hydrosulfite to decompose and permits oxidation of the hydrogen leuco compound. Too little acid promotes agglomeration. The correct ratio is approximately 2 quarts of 56% acetic acid to 1 pound of caustic soda. Vat-acid dispersions should be strained before use to remove oxidized dye.

Example:

Preparation of 100 gallons of vat-acid dispersion containing 1 ounce of Vat Blue G, C. I, #69825 per gallon:

Disperse in 50 gallons of soft water at 120 F.:

Vat Blue G, C.I. #69825 (6 pounds, 4 ounces on 100-gal. basis).

Add the following slowly, with rapid stirring:

2 ounces of dry caustic per gallon of bath of 106 F. Tw. (50%) caustic soda solution (12 pounds, 8 ounces on 100-gal. basis at 50%).

2 ounces of hydrosulfite per gallon of bath (6 pounds, 4 ounces on 50-gal. basis).

Reduce for 10 minutes at 120 F., stirring occasionally or slowly. Then add the following:

4 ounces of sulfonated naphthalene-formaldehyde condensate per gallon (12 pounds, 8 ounces on a 50-gal. basis).

Add with rapid stirring:

Acetic acid (56%)—25 pounds in 7 gallons of water.

Adjust volume to 100 gallons at 120 F. Strain before use.

How to Prepare Vat Liquors in Four Major Vat-Dye Groups

Vat dyes	Group	Water (Gal. per lb. dye)	Caustic soda (oz. per gal.)	Hydrosulfite concentrate (oz. per gal.)	Reduction Temp. °F.	Dyeing Temp. °F.
Vat Yellow 2 C.I. #67300	II	2	2½	3	120 to 140	110 to 120
Vat Orange 4 C.I. #59710	I	2	4	3	140	140
Vat Orange 3 C.I. #59300/4	III	1	2	3	120	70 to 89
Vat Red 1 C.I. #73360	IV	12	3	3	180	120
Vat Violet 2 C.I. #73385	IV	2	4	3	140	140
Vat Blue 20 C.I. #59800	I	2	4	3	140	140
Vat Green 3 C.I. #69500	II	2	2	2	140	140
Vat Brown 3 C.I. #69015	II	2	2½	3	120	100 to 120
Vat Brown 1 C.I. #70800	II	2	2½	3	120	100 to 120
Vat Black 25 C.I. #69525	I	2	2	2	140	140
Vat Black 22 No C.I. #	II	2	2	2	140	140
Vat Black 9 C.I. #65230	I	2	8	8	160	Slowly up to 170

Piccopale emulsions

the perfect mixer. Piccopale emulsions fortify and improve the important properties of latices, resin emulsions and other water-based systems. Available in a variety of grades, these emulsions are broadly compatible, water and alkali resistant, provide excellent adhesion and pigment binding, are low in cost and available in abundant supply.

The trademark of quality

PENNSYLVANIA INDUSTRIAL CHEMICAL CORPORATION
CLAIRTON, PENNSYLVANIA

CIRCLE 87 ON READER SERVICE CARD

Leon Moore (above, left), one of 12 Du Pont textile bleaching representatives, discusses a new Du Pont bleaching process . . .

Here's how Du Pont experience improve product quality

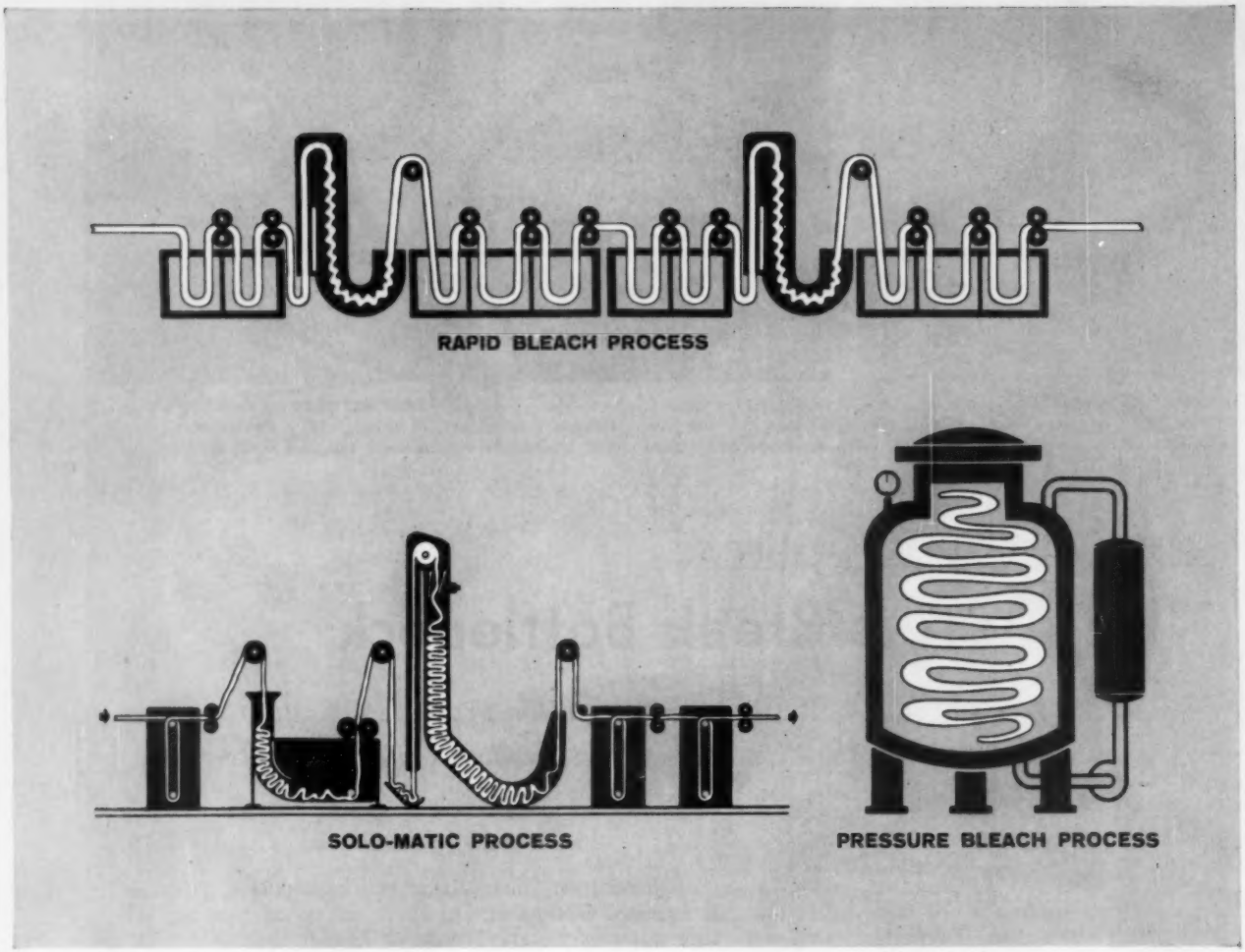
Du Pont technical representatives can bring years of practical textile mill experience to bear on your bleaching operations—and often will suggest ways you can cut costs or improve efficiency. For example, take Leon Moore (pictured above, left), one of Du Pont's twelve highly qualified bleaching specialists. He can help you maintain your processes at peak operating efficiency and also show you how one of Du Pont's new cost-cutting processes can economically fit into your present operation.

If it looks as though a continuous or semi-continuous system may solve your bleaching problems, Leon might suggest *Rapid Bleach*, the process that lowers cloth storage time to 8 minutes in each J-box, improves dyeing quality and eliminates rubmarks, bruises and creases.

If you bleach by a multi-stage, high-speed system, he can explain the advantages of *Solo-Matic* bleaching. This single-stage process can double your production in the same space, using present equipment—is currently performing satisfactorily in many mills.

Perhaps you're interested in kiers or package systems. Then Leon could tell you about *Pressure Bleach*, which cuts process time up to 50%, and doubles your production in the same space, using your present equipment.

ALBONE® hydrogen peroxide • **SOLOZONE®** sodium peroxide • **PERDOX®** sodium



These 3 Du Pont processes can help you save time, money and space. Major advantages are listed below.

and service help textile mills ... cut processing costs

Leon Moore, or the Du Pont technical representative in your area, is backed by an experienced technical staff in Wilmington, Delaware, and a new Sales Technical Laboratory. Here, laboratory scale bleaching equipment designed to duplicate actual field conditions is used to help find practical answers to many of your bleaching problems. And Du Pont's new, modern plant in Memphis, Tenn., assures you fast, reliable deliveries of high-quality peroxides.

Put this Du Pont experience and service to work for you... just call the Du Pont District Office nearest you, or write: Du Pont, Electrochemicals Department, Peroxygen Products Division, Wilmington 98, Del.

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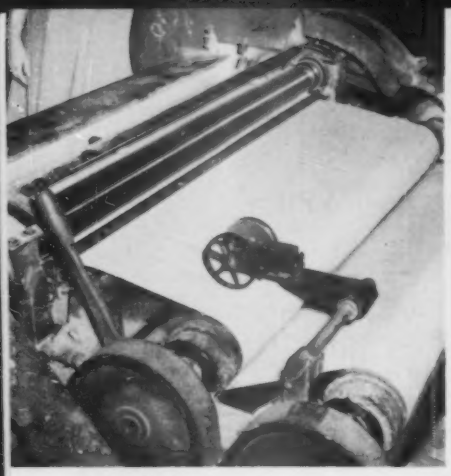


CORDUROY CUTTER (single-bar) is forerunner of present two-bar model. Guides in the wales don't oscillate.

DUCTING system (Collecto-Vac) over each knife bar picks up most of the lint, deposits it in the large container (background of photo). Now the large volume of lint produced by this two-bar machine is automatically removed from the area.

CHEMICAL TREATMENT & FINISHING

New Cutters Break Bottleneck

This alert company faced quality and production problems in cutting corduroy. Solution? They designed a machine that has no oscillating knife guides, cuts each wale in one run, cuts costs.

WHEN YOU can cut costs and improve your product at the same time, that's a real gain. Two gains in fact. That's exactly what Graniteville (S.C.) Co. managed to do with its new corduroy system (photos).

Like all finishers of corduroy, Graniteville Co. found itself stuck with the long accepted method of cutting alternate wales in the gray goods, reversing the roll, then running goods through the cutting machine again.

Several things were basically wrong with cutting corduroy this way. It was slow, for one thing. For another, quality could vary. The separate operation of rerolling the goods between runs took extra time. And tension variations always possible between runs could cause variations in cutting that would show up in the finished goods.

KNIFE-GUIDES are lifted by operator to let seam go through cutting machine. Ducting system is efficient enough to keep machine relatively free of lint.

First step in modifying the cutting machines was to eliminate the hammers and the oscillating motion of the knife guides. For generations people have thought that oscillating knife guides were essential to cutting corduroy. Graniteville cut out this motion on its cutters. The simpler machine worked well. It paved the way for the two-bar machine. But because of space limitations, plant designers felt that the oscillating guides had to go before they could build a satisfactory cutter with two sets of knives.

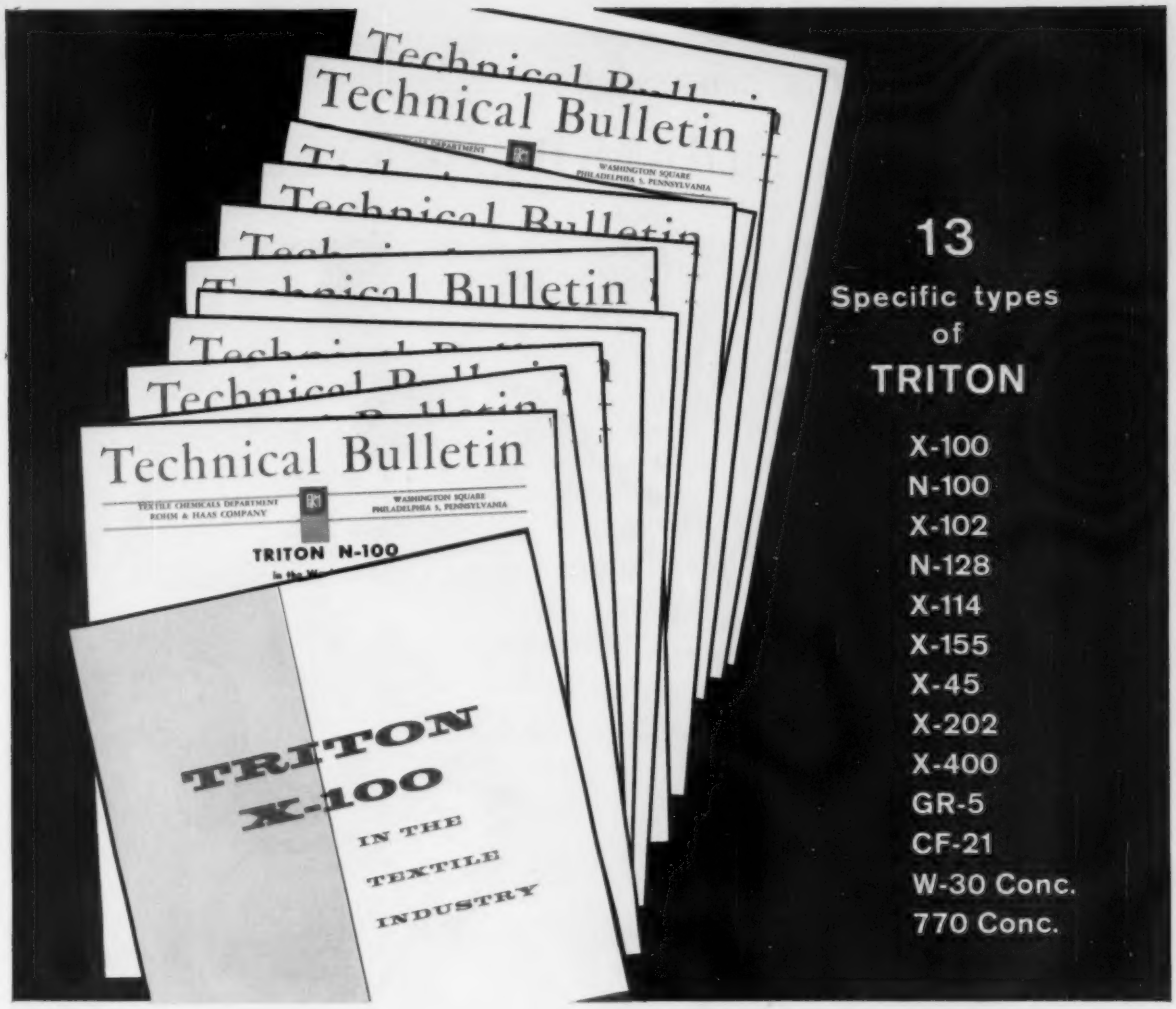
The new machines are more than living up to expectations. The knife bars are set up so that one cuts wales 1, 3, and 5 and so on. The other cuts 2, 4, and 6. Now the job is done in just the one run.

By casting off old ideas about corduroy cutting, Graniteville derives a double bonus from the new cutters. Production is way ahead of the old machines.

How much ahead? Graniteville doesn't like to say—but it's possible to put through 40,000 yards of corduroy on one of the new machines in an 80-hr. week. And quality is tops. The one-run feature of the new cutting system helps with that, too, because tension is the same throughout the run.

A side effect that developed into a headache for operators when the two-bar machines went into operation was the great quantity of lint produced by the two sets of knives. Higher cloth speeds further complicated the problem.

The plant got around that by installing the Collecto-Vac system (photo). Prior to lint removal by this system, operators were all but snowed under with lint, and it was impossible to operate continuously.



Facts and Surfactants for Textile Processing

Are you up to date on the versatility, and the process improvements possible with Rohm & Haas TRITON® surfactants?

Thirteen specific grades of TRITON detergents, emulsifiers, wetting agents, scouring, bleaching, dyeing, printing and finishing assistants are now being used regularly by textile dyers, printers, and finishers.

Ask your Rohm & Haas textile representative to bring you up to date on the TRITON family, or write for technical literature—as shown above—concerning processes you use or in which you are interested. Chances are, there's a TRITON that can mean savings, better efficiency, better quality, in your plant.

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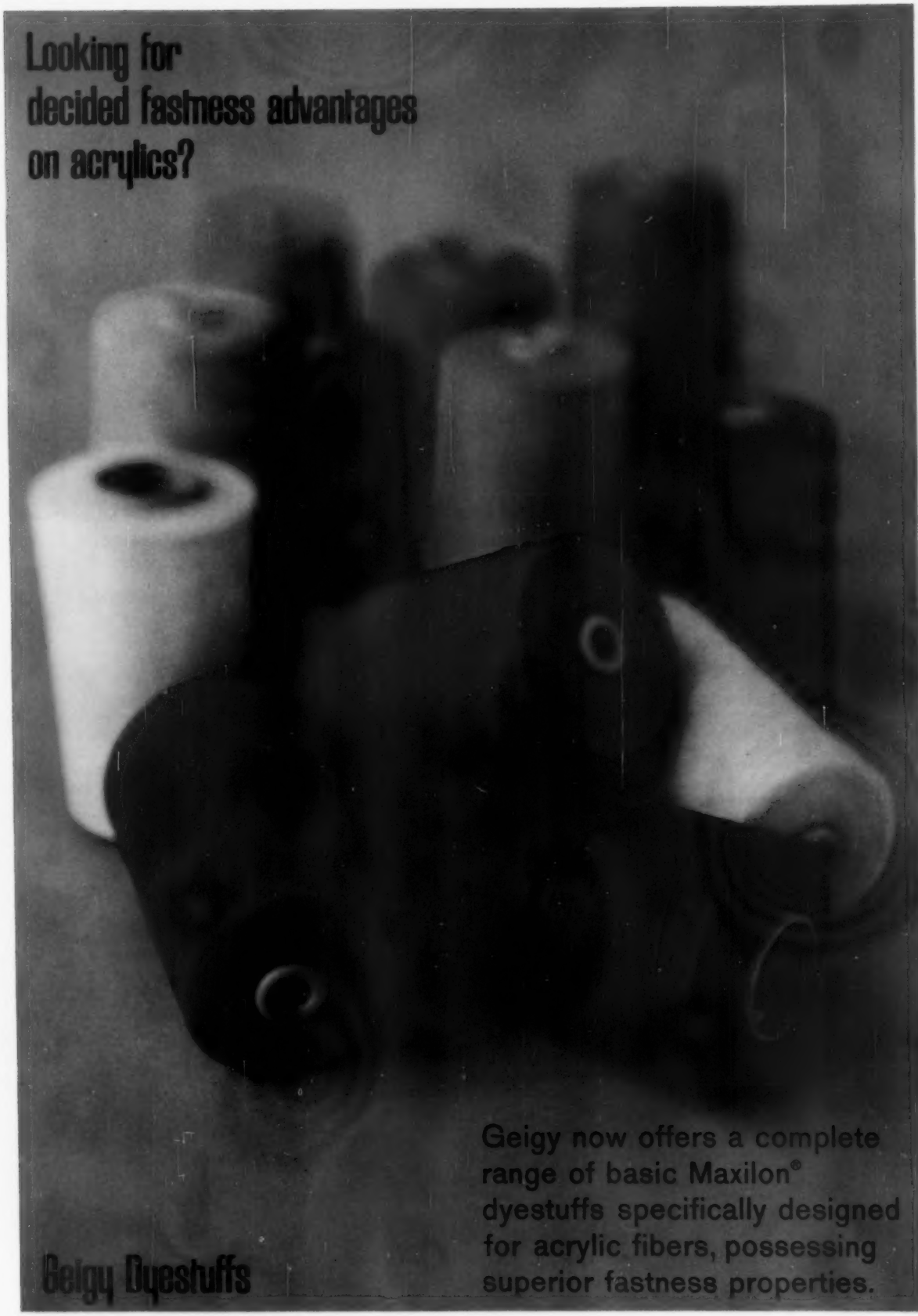
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Geigy now offers a complete range of basic Maxilon® dyestuffs specifically designed for acrylic fibers, possessing superior fastness properties.
Geigy Dyestuffs

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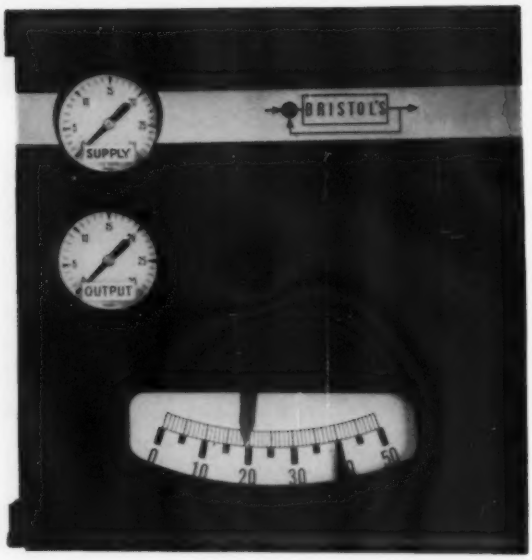

Series 624 A/D* pneumatic controller features simplicity and high control stability

- **Simple modular design for ease of servicing**
- **High control stability for closer process control**
- **Designed for batch-type and continuous processes**
- **Proportional and proportional-plus-reset control models available**

Top control performance with maximum simplicity plus standard Bristol precision measuring elements—those are the key features of the Bristol Series 624 Controller. The 624 uses the same renowned elements that have earned such a reputation for accuracy and dependability on other Bristol automatic controlling and recording instruments—perfected through wide experience and many years of development.

Self-contained modular design of the control unit speeds servicing. The whole modular unit, consisting of an aluminum casting with working parts made of stainless steel, Ni-Span C, and Neoprene diaphragms, can be removed by taking out only two screws and a link.

Outstandingly compact, the aluminum instrument case (only 8" x 8" x 5" overall) is completely weatherproof. It is designed for either flush, surface, panel, or valve mounting. Attachments for pipe mounting (2-inch pipe) are available. Write for complete data on the versatile and economical 624 A/D. The Bristol Company, 103 Bristol Road, Waterbury 20, Conn. 0.35

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CONTROLLERS OFFERED FOR:

PRESSURE AND VACUUM: Ranges from full vacuum to 10,000 psi.

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LIQUID LEVEL: With bulb unit and mercury manometer and dry-type differential unit.

HUMIDITY: Zero to 100% relative humidity.

CONTROL UNIT CHARACTERISTICS:

PROPORTIONAL BAND: 0-400% continuously adjustable, direct- or reverse-acting.

RESET: 0.1 to 50 repeats per minute.

AIR PILOT: Non-bleed type.

PILOT CAPACITY: 3.0 scfm.

FREQUENCY RESPONSE: Flat to 300 cycles per minute.

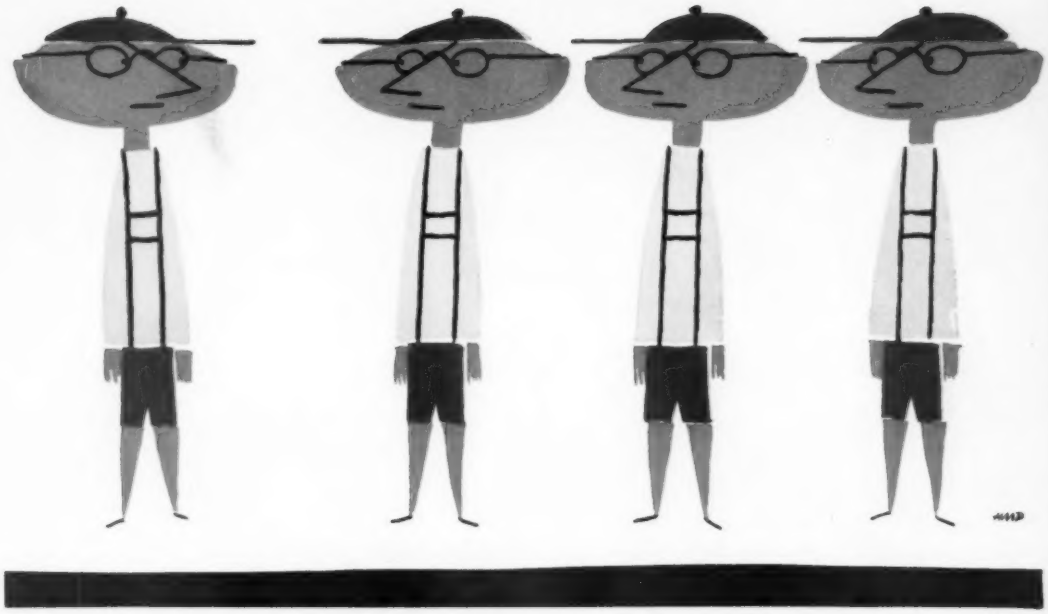
TEMPERATURE STABILITY: Less than 0.25% change in the output pressure for 90°F temperature change.

MATERIAL: Aluminum housing; 316 stainless steel internal parts; Ni-Span C feedback element.

BRISTOL... for improved production through measurement and control

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

PUTNAM PRODUCTS FOR THE TEXTILE INDUSTRY



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Badische Anilin-and Soda-Fabrik A.G. research has developed the following outstanding dyeing auxiliaries:

- **Basogal P** – completely new approach for leveling vat dyeings.
- **Nekanil AC special** – cationic agent, combining cleansing and leveling properties, especially in acetate and wool dyeing.
- **Uniperol W** – leveling and protective colloid agent for dyeing wool, polyester and polyamide fibers.
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- **Primasol FP** – an entirely new auxiliary for all pigmentation processes.

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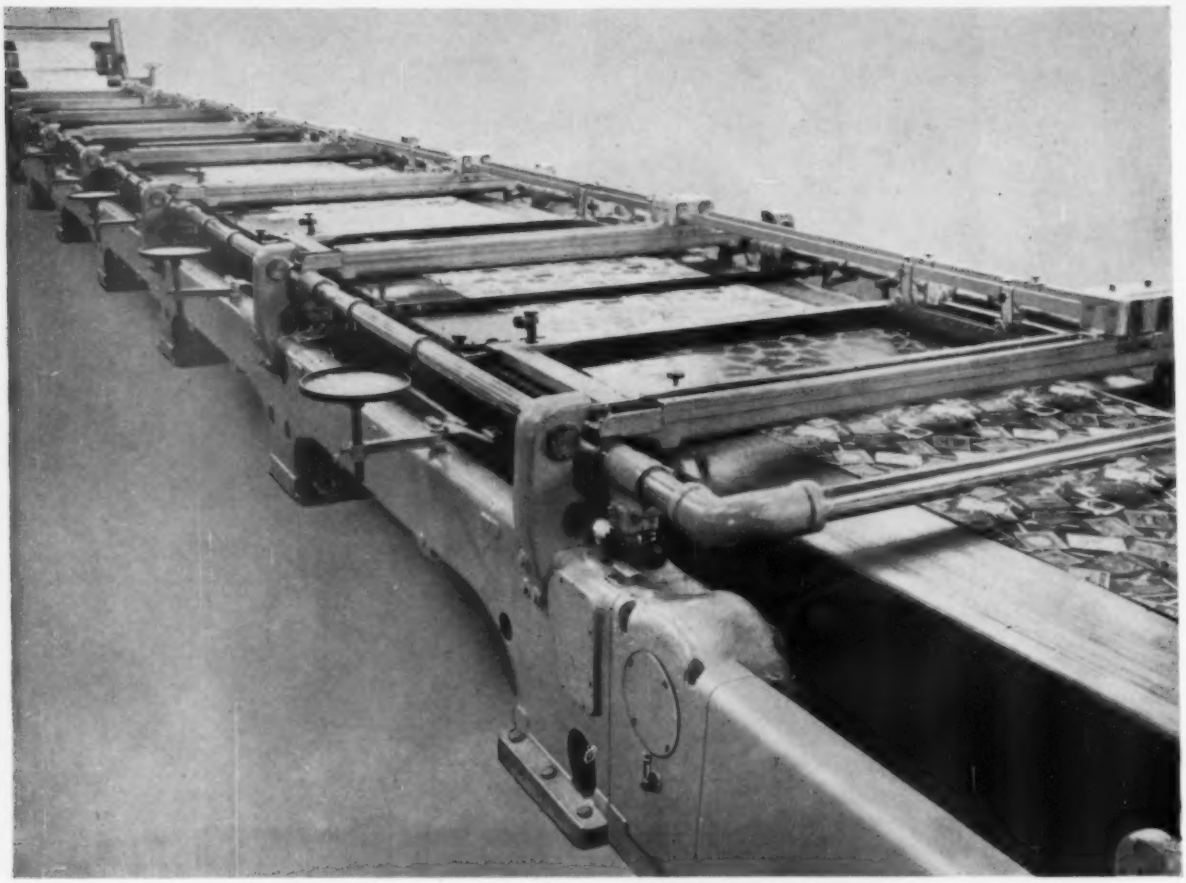

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The Ichinose screen printing machine, with more than 140 patented improvements, screen prints all kinds of fabric perfectly in maximum 21 colors at nearly double the speed of other machines on the market. Finished prints are of highest quality: clean, sharp, accurate and far superior to hand or roller prints.

Ichinose means less power and steam, cuts labor costs to only two operators. Change of design and colors takes less than 30 minutes.

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FIBREGARD is the original colloidal lubricant—a smooth, viscous, flowable white cream instantly soluble in any water. It produces thin bodied, stable emulsions that have a pH of 8.0 and it is compatible with standard warp sizing formulas . . . starches, gums, etc. There is no other lubricant on the market today that can provide the outstanding benefits FIBREGARD provides. This is a matter of record in mill after mill throughout the country where this outstanding lubricant eliminates waste, saves time and lowers processing costs.

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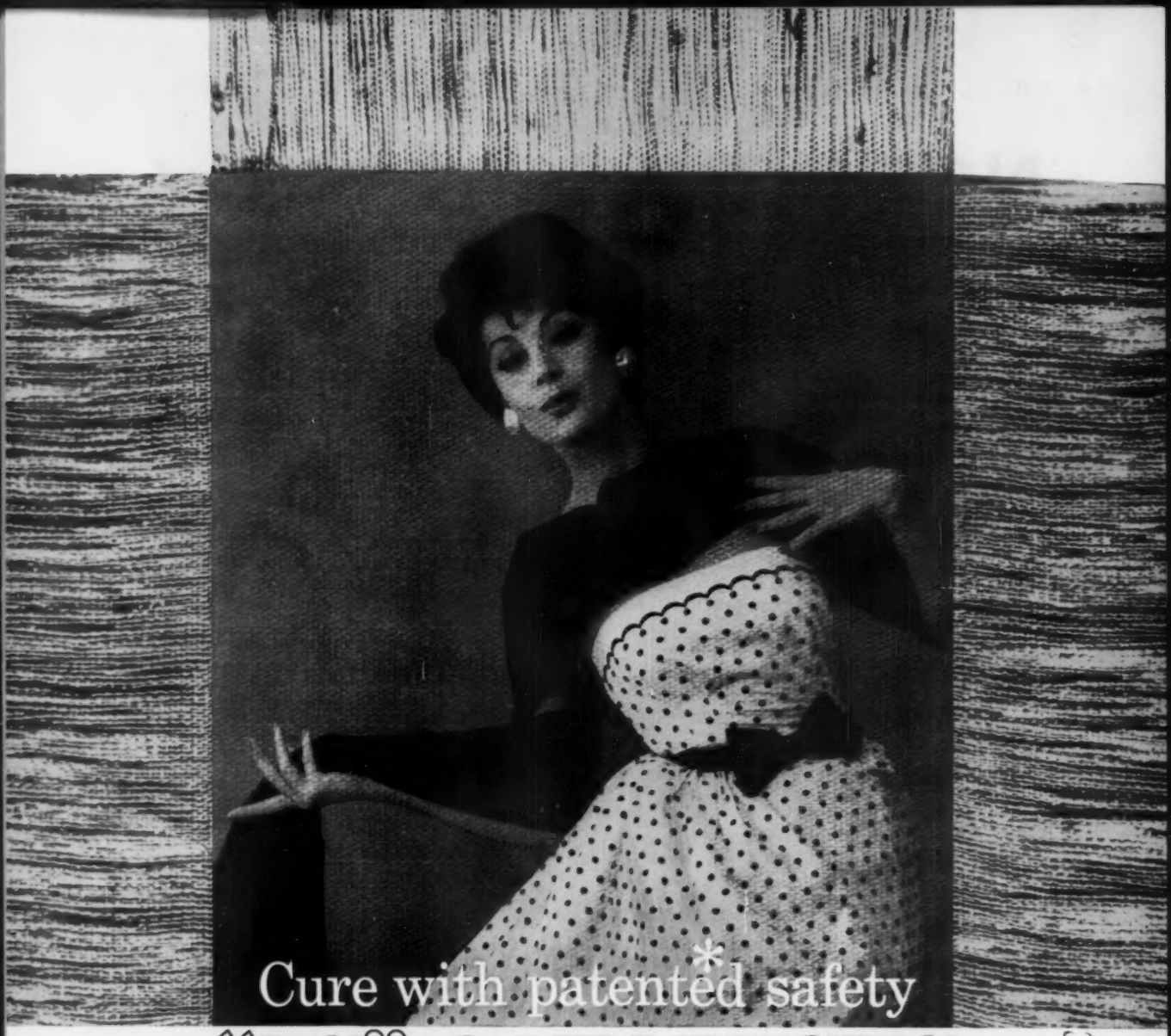

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*Monsanto is the owner of U.S. Patent No. 2,467,160 covering compositions of acid curing aminoplasts with a hydroxy amine salt as a latent curing catalyst.

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Nopcosize D	Water-soluble polymeric size developed for slashing Dacron* filament yarns
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Nopco 1440	Warp size bath additive that acts as a plasticizer, lubricant and penetrant for rayon and acetate sizes
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*Trademark of E. I. du Pont de Nemours & Co., Inc.

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Nopcostat 56-C	Antistatic oil recommended for use on all woolens. Applied in range of 3-5% owf
Nopco 100	Blended fatty lubricant for wool and synthetic fibers
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Syntergent 130-W	Low-temperature raw wool scouring detergent
Nopco 1479-D	Designed for the fulling and scouring of wool and worsted fabrics. High soda ash stability
Nopco 1658-C	An inexpensive detergent designed to replace soap for fulling and scouring on a pound-for-pound basis
Nopco 9092	Fulling compound with exceptional detergency. Will tolerate soda ash solutions as high as 14 ounces per gallon

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Polymul® Series	Series of polyethylene emulsions used as pure finishes and softeners in resin formulations
Nopco 1425-B	Dye leveling and stripping agent recommended for acid, premetalized and chrome dyestuffs
Nopcosulf® Series	A group of sulfated vegetable, animal and marine oils which vary in activity and degree of sulfation. Used in dyeing, bleaching and finishing of cotton and synthetic fibers

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Franklin Colorbred Yarns

Trade Mark

HOW DOES A COLOR SERVICE OPERATE?

A color service answers the need of a mill stylist for a range or family of colors, appropriate to his particular market and price range, which can be used individually or in combinations, and which will prove valid for the coming year.

Such a service is made possible by maintaining close contact with those few fashion color specialists who are familiar with the cyclic changes governing the public's choice of color in a specific field. There are trends which must be studied in high fashion, sportswear, decorative and domestic fabrics, in high, medium and low-priced lines. Within each, in any season, will be found shades which will evoke a sales response and others – perhaps passing by the same general name – which will not. This is where the color service is of vital importance to the mill.

It is the answer to management's need to support their mill stylist with the most expert specialized knowledge obtainable, as to the ranges of color which may be used with assurance for a particular class of merchandise and price category.

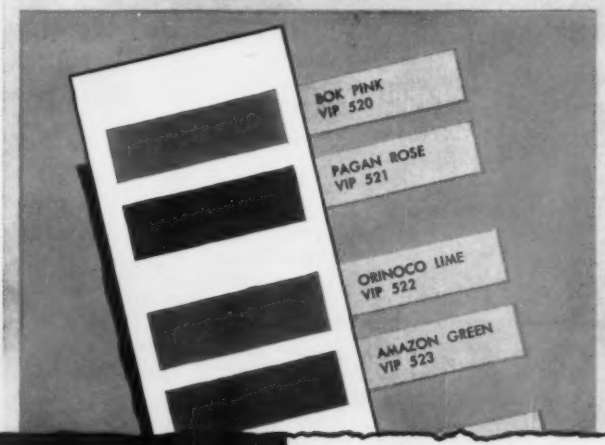
Everybody loves the sun . . . but the sun doesn't love every Color.

Franklin Process

PRESENTS

V.I.P.* Colorbred YARNS

FOR SPRING 1962



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If you have had extensive experience with Franklin Colorbred Yarns, you already *know* that they stand for economy and efficiency in the mill. With more than half a century of experience, the largest package dyeing capacity in the world and unsurpassed laboratory and processing equipment and personnel, we know your yarn, putup and color requirements intimately and can supply them promptly.

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*Fashion-Right and Quality Controlled

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Largest Package Dyers in the World of Natural and Synthetic Fiber Spun Yarns for More Than Half a Century

DIVISION OF INDIAN HEAD MILLS, INC.

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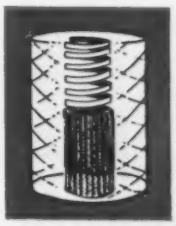
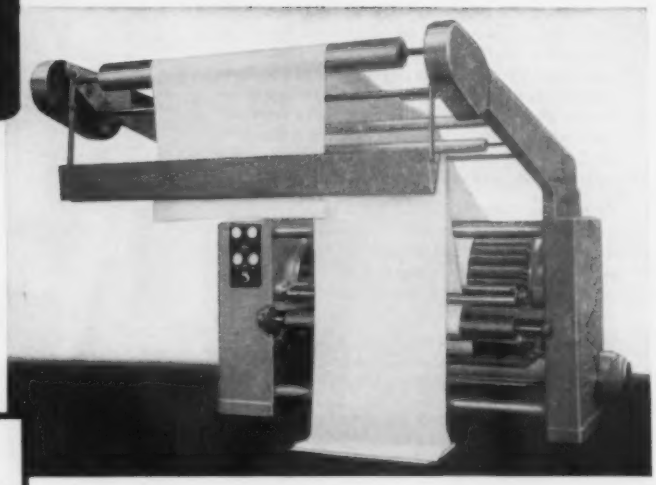


X-ray view of Franklin Package — the "secret" of uniform shades. Don't say "package dyed". Say . . . "FRANKLIN COLORBRED"

30-1

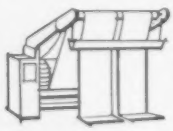
Pressure Controlled Napping

The entire story of the complete napping operation is registered on this single panel.

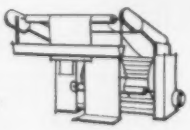


24 Roll Double Acting Hi-Torc Napper

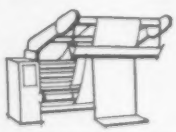
There are only five places in the world where you'll find this pressure control, and that is on each of the five Gessner Hi-Torc Nappers.



30 Roll Double Acting Hi-Torc

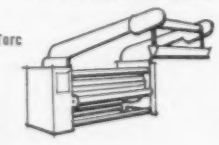


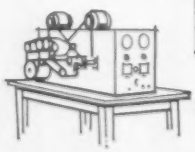
24 Roll Double Acting Hi-Torc



24 Roll Single Acting Hi-Torc

24 Roll Knit Goods Hi-Torc





Laboratory Hi-Torc

Something new? Yes, for those who have yet to avail themselves of Gessner's napping control with positive pressure. By the simple means of pressure, a constant that stays that way at all times, the entire cycle of napping is rigidly controlled — the progress of the cloth, the napping energy, the rotation of the rolls, everything. The operator alone can change it and right at the control panel.

Once the desired amount of pressure is determined, that same pressure may be re-established — anytime. Fabrics to be napped at 100 pounds pressure will always receive the same nap, unaffected by belt slippage, or change in the diameter of the worker rolls.

DAVID GESSNER CO.

WORCESTER, MASS.

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HOOKER'S NEW CAUSTIC SODA DRUM
FLIPS OPEN, EMPTIES EASIER

You don't need a tool kit to open Hooker's *new* caustic soda drum. Flip the snap-lock and it's open. Flip it the other way and it's closed.

It's easier to get at the soda because the drum has a *full* open head—21 inches across.

The soda pours smoothly when the drum is tipped. There's no rim to catch and hold it; no waste.

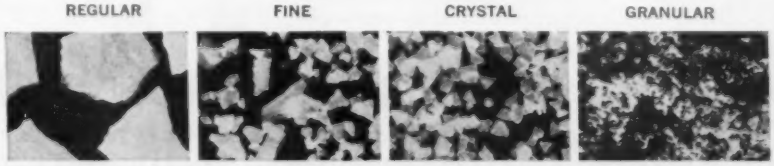
The improved seal keeps out moisture, too.

Since the drum mouth is bigger, it's easier to re-use the drum after it's empty.

Yet this 400-450-pound capacity drum is standard. There's no price boost or premium. It's another advance from Hooker, who first supplied 18-inch-mouth drums as standard.

Nevertheless, the contents are still your prime concern. Hooker's caustic soda is of uniform quality. Flake thickness and size don't vary from batch to batch.

Hooker's caustic soda is available in four sizes: regular, fine, crystal and granular. Specify flake size when ordering.



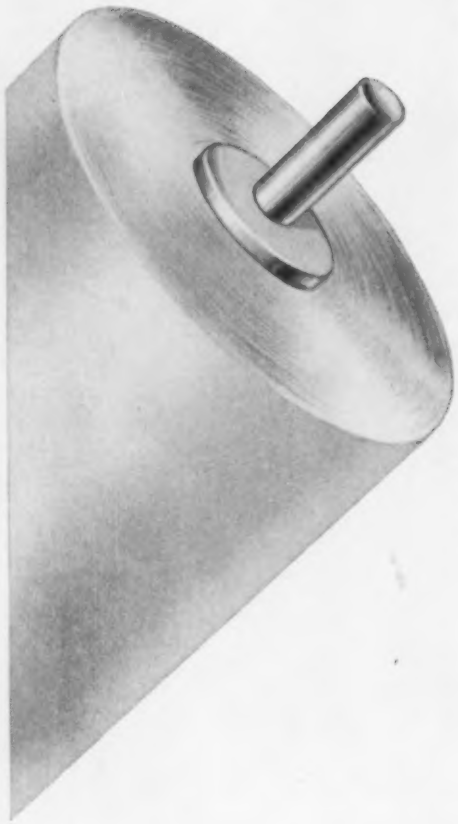
HOOKER CHEMICAL CORPORATION

1703 FORTY-SEVENTH STREET, NIAGARA FALLS, NEW YORK

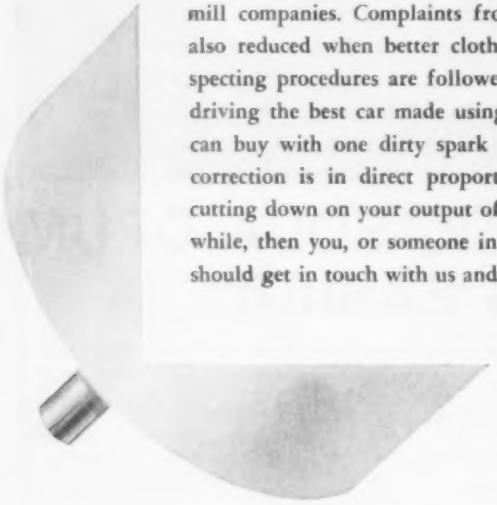
HOOKER CHEMICALS PLASTICS

CIRCLE 105 ON READER SERVICE CARD 105

PROFIT
IN FIRSTS . . or
LOSS
IN SECONDS



The difference in price you can get for Firsts over Seconds can give you the best Cloth Rooms in the world. And Cloth Rooms equipped with modern C & M machines catch operational mill errors faster — in opening, carding, spinning, slashing and weaving . . . can cut down the amount of Seconds sometimes as much as 100%! Alert mill management is becoming increasingly aware of the importance of better Cloth Room operation and its effect on their profit picture in plain dollars and cents . . . especially in multiple mill companies. Complaints from Converters are also reduced when better cloth finishing and inspecting procedures are followed. It's sort of like driving the best car made using the best gas you can buy with one dirty spark plug. The cost of correction is in direct proportion. If you think cutting down on your output of Seconds is worthwhile, then you, or someone in your organization should get in touch with us and talk it over. Now.



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FINISHING MACHINERY SINCE 1831

CURTIS & MARBLE MACHINE CO.

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SOUTHERN SALES & SERVICE • LAURENS ROAD • GREENVILLE, S. C.

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OPENING A BIG, NEW FANCOURT PLANT AT GREENSBORO NORTH CAROLINA

WATCH FOR THE OPENING DATE...
THE OPENING OF THE FINEST FACILITIES AND SPEEDIEST SERVICE IN THE TEXTILE CHEMICAL INDUSTRY

Yes, we're moving ahead in '61, expanding our operation to provide our customers with the newest, most modern advancements in the field . . . advancements in every department: research, laboratory, production and service. Our progress means our customers' progress!

NEW MODERN RESEARCH AND DEVELOPMENT LABORATORY
equipped with latest instruments for developing, testing new products . . solving customer problems.

DOUBLE PRODUCTION
expanded manufacturing department with newest equipment to maximize production.

SPEEDIER SERVICE
improved new shipping facilities . . accelerated service to customers.

BIG, VOLUME-PRODUCING PLANT
ultra-modern, three-story building on ten-acre tract . . 25,300 sq. ft. operating space.

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Order your new RIDGID No. 141 Threader today!

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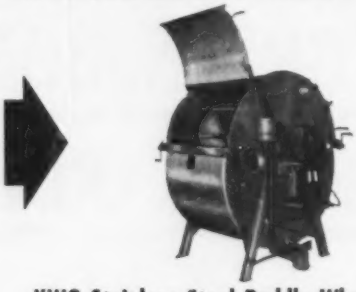
QUALITY DYEING MACHINES FOR QUALITY DYEING

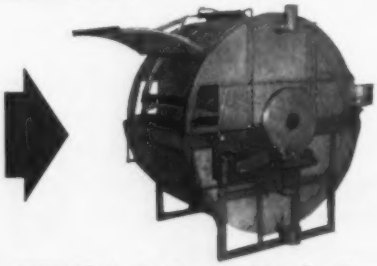
KWG Double Reel Skein Dyeing Machine

All stainless steel built to capacities of 1000 pounds. Skein dyeing machines—both hoist and non-hoist type—for all yarns and narrow fabrics.



KWG Stainless Steel Paddle Wheel Machine

These versatile machines are designed for the successful dyeing of a wide variety of garments, including hosiery, tapes and sweaters. Capacities from 10 to 850 pounds. Available with or without cover. Stainless steel.



KWG Skein Dyeing Machine for Narrow Fabrics

For handling narrow fabrics like zipper tapes. Complete line of models from 10 to 50 sticks and capacities from 100 to 500 pounds.

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For stripping and discharge printing.
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For reduction of vat colors. Non-Dusting
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For stripping wool stock, shoddy, rags.
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For stripping acetate dyes and discharge printing on acetate dyed grounds.
HYDROSULFITE QD—For rapid dissolving in continuous vat dyeing.

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AMPROZYME®—For liquefaction of starches and proteins in de-sizing textiles.
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ORATOL® L-48—A synthetic detergent with excellent penetrating and emulsifying properties.
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DETERGENT W-1750A—Has anionic and non-ionic properties; excellent for scouring nylon and dacron to remove throwster sizings; penetrates and lifts graphite streaks

DYEING

WETSIT™ CONC—A synthetic aromatic compound for wetting out in both the dyeing and scouring operations.
WETSIT NI—100% non-ionic wetting agent.
MONOPOLE® OIL—A highly concentrated, double sulphonated castor oil for a wide range of operations.
APASOL®—Particularly effective in the dispersion of acetate printing colors. A sulphonated ester with a high combined SO_3.
LOMAR® PW—Dispersing agent for pad dyed vat colors; also retardant in the dyebath.
SULPHONATED OILS—Castor, Cod, Sperm, Olive, Neatsfoot, Pine, Red, Teaseed, etc.

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DILEINE® SERIES—An amino concentrate for the prevention of atmospheric gas fading on dyed acetate fibers.
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CREAM SOFTENERS—In different strengths and varied degrees of alkalinity for a soft full hand to all types of fabrics.
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CHAFE REMOVER W-545-T—A finishing oil for textiles, particularly silk fabrics, to remove chafe marks.
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OIL S-261C—A clear, amber oil used as a penetrator and softener for cotton cloth; aids in uniform shrinkage.
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WEIGHTER FINISH M—For heavier body and better hand for all fabrics.

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SUPERCLEAR™—Prepared from natural gums as a thickener for printing all types of textiles.
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ACETATE OF CHROME—As a mordant in dyeing and printing mordant colors. Also for dyeing mineral shades.
TRAGACANTH—Gum solutions in various concentrations for extra clear, sharp prints when used with acid, direct or insoluble Azo dyestuffs.

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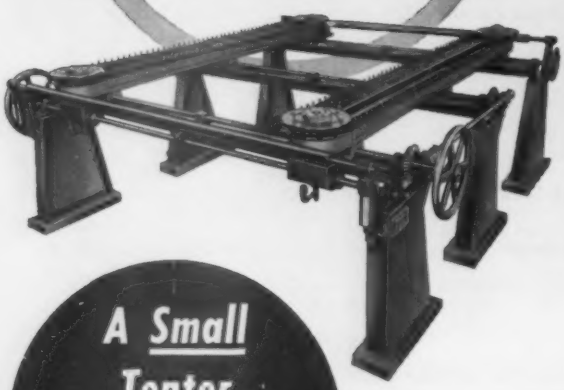
Order M&W TENTERETTES



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M & W Tenterette: 30", 80" or 100" long, using our No. 12 tenter clip. We build to any maximum width, with either straight or hinged rails. Serves many uses.

These short tenters are made *only* by M & W — one of our specialties, developed to answer special needs in many foremost finishing plants.

We can promptly supply full data — advise you how M & W Tenterettes, and other devices like our Constant Tension Batchers, can fill long-felt needs in your plant that no other machinery satisfies. Write today for information on —

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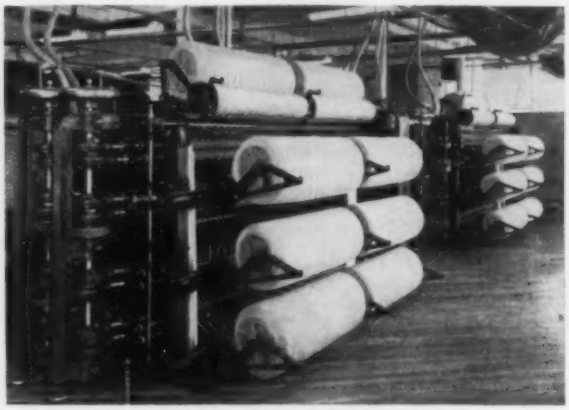
CIRCLE 251 ON READER SERVICE CARD



DOUBLE RUB, FOUR BANK TAPE CONDENSER

Built in 48", 60", 72" widths for adaptation to all carding machines. Write for information.

Duesberg-Bosson of America, Inc.
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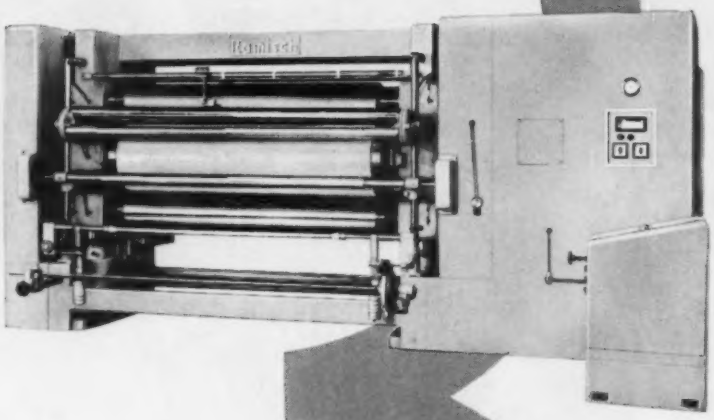
TRIPLE PURPOSE RAMISCH TRICOT SCHREINER CALENDER

THIS VERSATILE MACHINE REQUIRES ONLY 30 MINUTES TO CHANGE OVER FROM—

- Schreinering
- Flat Embossing
- Relief Embossing



We have added this renowned equipment to our line because we believe it is unexcelled in construction, performance and range. Its multi-functional usefulness permits mill-owners a variety of finishes plus substantial savings. Briefly, some of its unique features are:

The upper bowl for each of the various processes can be readily removed owing to a special roller coupling device. You need no more than 30 minutes to detach the bowl from the calender frame and exchange it for another, without disturbing drive or drive gear.

Dr. Ramisch & Co. in West Germany are one of the most experienced firms in the calender line. Its many products cover the entire range and needs of the textile industry.

Reiner also offers machines for handling woven goods, for laboratory use, and special effects.

Complete descriptive literature, Schreinering and other sample swatches upon request.

ROBERT REINER, INCORPORATED

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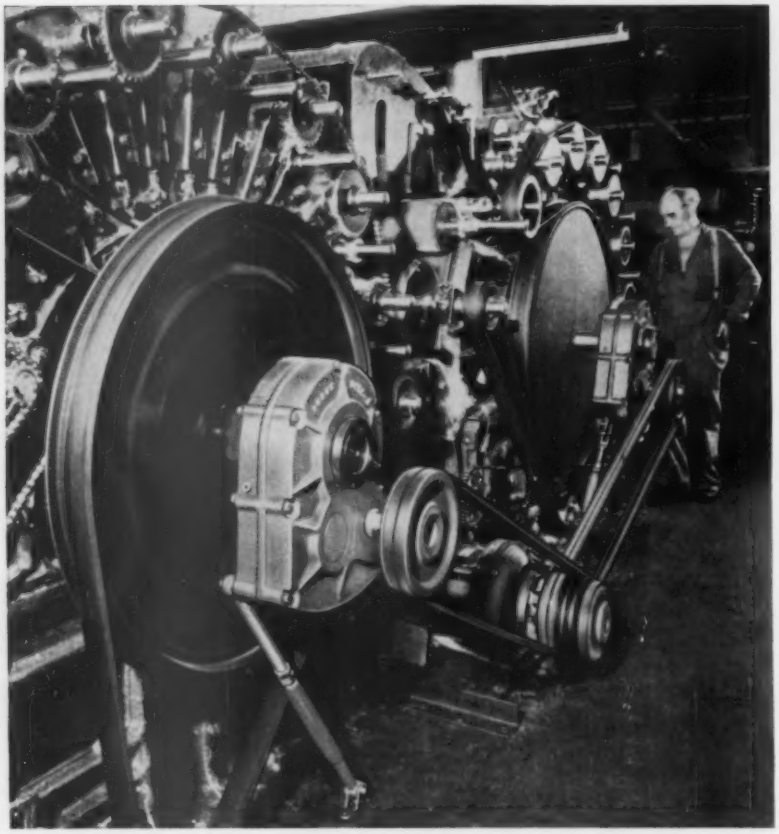
WEEHAWKEN (Only 10 minutes from Times Square by direct bus) NEW JERSEY

AN HONORED NAME IN TEXTILE MACHINES SINCE 1903.

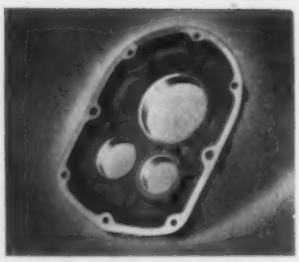
...the quality-engineered package

that simplifies speed reduction

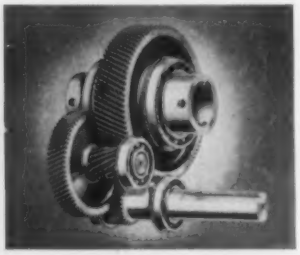


DODGE TORQUE-ARM, America's most widely used shaft mounted speed reducer, will save money for *you.* No foundation, no sliding motor base, no flexible coupling, no installation fuss. Developed and perfected by Dodge, this reducer has been so widely accepted in industry that it is now built and stocked in this unmatched range of sizes and models: capacities up to 170 hp; output speeds from 10 to 400 rpm; ratios of 5:1, 15:1, 25:1; speed ratios up to 175 to 1 with correct selection of speed reducer and V-belt drive. Built-in backstop available. Also positive overload release. Vertical models. Flange mounted models. Special application models... Go modern—go Torque-Arm! See your Dodge Distributor, or write us.

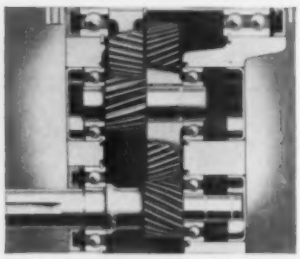
Dodge Manufacturing Corporation, 1400 Union St., Mishawaka, Ind.



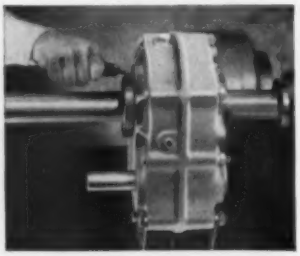
Rugged, semisteel housing holds bearing seats in line for entire life of unit. Laughs at loads. Corrosion resistant.



AGMA rated helical gears. Soft cores withstand shock; hardened surfaces defy wear. Teeth are crown shaved.



Gears are located *between* bearings and carry their loads without strain. Longer life, higher efficiency.



Unit slides completely onto shaft and locks on *both* sides of housing. This baby stays *put*—runs truer longer.

The Products with the Pluses... **DODGE** ***of Mishawaka, Ind.***

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge he can give you valuable assistance on new cost-saving methods.

Manpower Management

By PAUL A. KING, Labor Relations Counsel, New York City

Elementary, Dr. Watson: The loyalty of an employee is gained or lost within the first 48 hours, warns John C. Massey, sociologist and post-office training expert. Don't fall into the trap of lightly turning over the new employee to "one of the older employees who happens to be disgruntled . . ." It may cost dearly.

The cost of a southern trip—$204,861: It was a nice feeling while it lasted—but it didn't last long. A court assessed a New York clothing manufacturer $204,861 in damages for transferring his operations to Mississippi. All but $35,000 to $40,000 has been forgiven by the plaintiff — the Amalgamated Clothing Workers—in exchange for a 6-year pledge to do all work in New York union shops.

Par for the arbitration course: How many grievances should end up in an arbitrator's lap? Arbitrator Carl R. Schedler described his ideal to a Labor Law Institute meeting in Dallas, Tex. He used as a model a large company dealing with a large union (names are withheld). Of the grievances filed, 60% were resolved at the first step; 0.1% went before an arbitrator.

Hospital and surgical for the retired: Insurance plans — 288 of them — are available on a private basis for your employees who become 65 years of age —or older—according to Ardell T. Everett, vice president, Prudential Insurance Co. Do you furnish life insurance to retired employees? Here's a swap to think about—paid hospital and surgical coverage for pensioners for reduced company-paid life insurance.

Employee profit-sharing pays off for stockholders, too: A survey by the Profit-Sharing Research Foundation of large food-store chains showed that a dollar invested in 1952 in a chain with a profit-sharing plan was worth $4.22 seven years later—only $3.31 if it had been invested in a chain without a profit-sharing plan.

Employment application falsehood justifies discharge: You are justified in firing an employee who, on his employment application, fails to reveal a conviction for a morals charge—even though it happened 10 years before when the applicant was 19, ruled a Connecticut Board of Arbitration. The union's argument that he had paid his debt to society cut no ice.

Safety is not all people: Environment counts, too. Has your plant safety committee seen Bureau of Labor Statistics Bulletin 211 giving the lowdown on how to spot deficiencies in plant facilities and layout? It's called "Control of the Physical Environment." Your 15¢ to the Supt. of Documents, Washington 25, will bring you a copy.

Helping the womenfolk: Be a hero among your community's women's clubs

 . . . *Begins on page* 113

by suggesting they get in touch with Mary B. Brown, National Association of Manufacturers' head of Women's Communications, for kits, guides, and booklets for running meetings. Write NAM at 2 E. 48th Street, New York 17.

For supervisors—the patience of Job: One grievance easily became two when a foreman flew off the handle, used "unbecoming" language to a worker who discussed a grievance with him. The use of such language violated the union contract, was a justifiable grievance in itself, ruled arbitrator Harold T. Dvoret. Which clause was violated? The one that reads: "Purpose of the contract is to regulate the mutual relations between the parties with the view of securing harmonious cooperation."

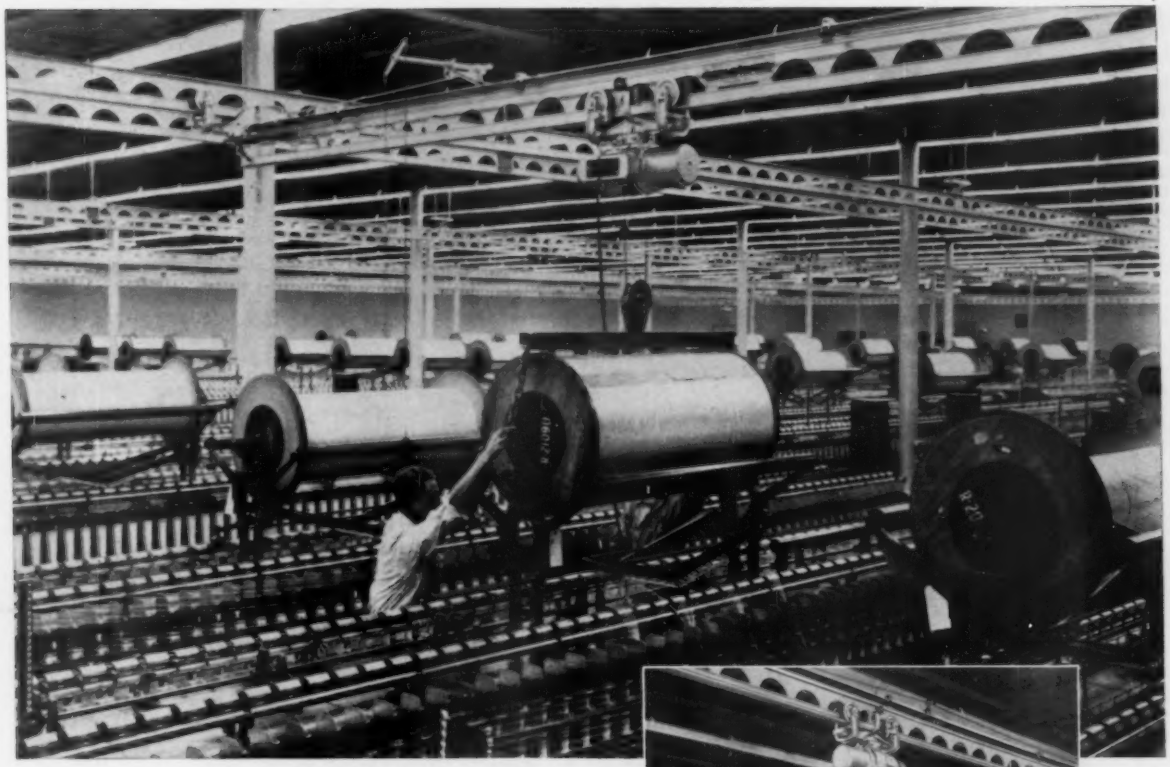
Death in the family: If your problem is how far to go in giving employee time off, look at union contract provisions. Says the Bureau of National Affairs: One-third of the union contracts it surveyed restrict time-off with pay to those instances where a parent, child, brother, or sister dies. The rest more generously recognize a few other relatives.

Is a white-collar union necessary? Allis-Chalmers Mfg. Co. has successfully thwarted white-collar organization attempts on many occasions. What's the secret? K. C. Flory, assistant to the director of industrial and business relations, outlined his formula to an American Management Association conference: "When a union is able to produce sufficient card signatures to support a petition for certification, we invariably find management failure somewhere along the line . . . This frequently occurs at the supervisory level . . . We have found it advisable to proceed immediately with supervisory informational and instructional meetings . . . in small groups . . ." Subjects covered: "The mechanics of an organized drive, **do's** and **dont's** of supervisory conduct, digging out misunderstanding or misapplication of personnel policies among supervisors, how to clear up employee misconceptions, negative aspects of union organization."

Cone Mills Corp. finds out what's in a name: When the 3-year court battle ended, a federal district court finally concluded that an arbitration award against Cone Mills was valid and enforceable. Cone had designated Christmas week, 1956, as a payless vacation period for several of its plants (they did get paid for Christmas day). The North Carolina Employment Security Commission refused worker claims for unemployment benefits. It was a vacation, it reasoned. A layoff, countered the TWUA. TWUA was right, ruled an arbitration board, which ordered Cone to pay the idled employees the amount of unemployment benefits they would have received had it been called what it was—a layoff.

A union contract doesn't freeze job content: Nor does it guarantee employment. The contract of the Roxbury Carpet Co. gave it the right to change or introduce machines, processes, and methods to use the employee's working time most productively with this IF: The worker's physical or mental condition wasn't adversely affected and undue fatigue wasn't caused. The company rearranged work flow by eliminating waiting time—cut out 10 jobs. This was not a new method of manufacture, complained the TWUA. Sure was, ruled the arbitrator.

Cuts Beam Handling Costs with TRAMRAIL TRANSFER CRANES



Hand propelled Cleveland Tramrail cranes with electric hoists make the handling of heavy beams to twisters an easy one-man job.

WITH floor space so expensive, doesn't it make sense to use your ceiling for the conveyance of beams? That is what you do when you use Cleveland Tramrail transfer cranes. They permit you to move beams to all parts of a room on overhead tracks. Need of wide aisleways for beam handling is eliminated.

Transfer cranes may be locked together by an automatic latch without jiggling, permitting a loaded carrier to be traveled from one to the other to reach any point desired. They move free and easy above machines and floor obstacles. They do away with floor damage and costly maintenance.

When beams are handled overhead, more machines (twisters, looms, etc.) can be installed in a room because they can be spaced more closely. That means greater production per square foot. Because it is easy to pile beams high, more can be stored in a storage area and again floor space saved.

There are many, many installations of Cleveland Tramrail cranes handling beams in the Textile Industry. Because of their many advantages, we welcome the opportunity of arranging a visit to one near you where you may learn what the possibilities are first hand.

Write for free booklet—2008.

With a crane, overhead beams can be piled high with no effort and thereby a great deal of floor space saved.

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Two Designers Speak Out

Best remedy to import problems, these men say, is exploiting the natural styling advantages every American mill possesses. Says one: "Stop spending so much time tending your looms and put more emphasis on styling."

LOTS of mill men are talking about imports these days. They're looking for ways to stay in business and prosper in today's hotly competitive markets. In the text below, two of the nation's outstanding textile designers offer their views—and their help—in this search.

TEXTILE WORLD does not believe (and these designers would be the last to claim) that these views alone are the whole answer to the imports problem. But we do believe that these views are provocative and constructive and that they could be helpful to the industry—another string to the industry's bow in its quest for stability and prosperity—ED.

"THE SUCCESS of the Japanese and other foreign mills has been limited by their own lack of understanding of American fashion trends," says Designer Bernard Stollman of Bernati in New York.

"If the Europeans don't understand American designs, Americans do appreciate European ones," says Designer Jack Lenor Larsen, also of New York.

What both men seem to be saying is that style consciousness is likely to pay a key role in the future as American mill managers find themselves competing against not only the most alert producers in America, but in the world.

Stollman has an idea that management may be too production-oriented. "Stop spending so much time tending your looms and put more emphasis on styling," he says. He goes on to say that quality standards maintained by American mills are second to none. "You can be justly proud," he says. "But," he adds, "you have to realize that the American woman, on whose taste and judgment your survival depends, will buy styling first, quality second."

REGAINING THE OFFENSIVE

Stollman believes that foreign producers have a natural disadvantage when they compete with American mills on design. Just by being "foreigners" they are hindered in developing a feeling for American tastes, he believes. It's even more difficult for them to keep pace with the fashion fads that suddenly and constantly sweep the country.

Design offers an opportunity for America to regain the dynamic, offensive position that has lately been grabbed off by the foreigners, Stollman thinks. But he maintains managers have been ignoring their opportunities.

He notes that instead of taking advantage of the natural limitations of the imports in design, American textile managers have been trying to fight on the wrong battleground —where the competitor is strongest. That means price.

What's worse, he thinks that America's textile tastemakers have let the Italians, British, and Danish get the jump on our own producers. Foreign producers, adds Designer Larsen, are trying to convert Americans to their styles rather than trying to match prevailing style tastes in America.

These foreign promotions, both designers believe, have met with success because of a partial vacuum in American design. As Stollman puts it, "In despair, the apparel manufacturer is now taking the initiative in contacting the design consultant because he is disappointed with the slavish imitation of the converters and mill agents. They just copy one another."

Where does that leave the American consumer-goods mill manager? With an opportunity, both designers think, to wage aggressive, imaginative warfare on foreign competition on ground picked by American management, not ground picked by foreign mill management.

TWO STEPS FOR LEADERS

Here are two steps suggested by Designers Stollman and Larsen as the starting point for a constructive surge of new activity:

Step 1—Admit the importance of design. Stollman thinks that means accepting the fact that Amer-

on Imports Today

ican mills have neglected design in the past." Signs of this neglect, according to Stollman, are the success of foreign promotions and the dissatisfaction of garment manufacturers with present design. "Design can be an important part of your competition with imports, but you first have to acknowledge its value," Stollman says.

Step 2—Realize that it takes a designer to design. Too often there is an attempt to compromise. Too often a temptation to use technicians instead of stylists, Stollman thinks. Larsen sees things like this:

"The break between technicians and designers is complete. Seldom is there a man who knows both production and design. Unfortunately, textile school graduates are also in design departments. They know costs, techniques, and the rest, but they don't know design.

"Often the designers don't know enough about production, either," Larsen confesses, "and mill people sense it. They feel the designer is a little out of touch—and that's when production people take over. Result is that the two work against one another . . . even sabotage each other's work."

As a result of this conflict, Larsen believes, mill executives sometimes develop a disparaging attitude toward design. This attitude takes two forms. One manifestation is swatch-copying—trying to reproduce a sample by giving it to the technical man for a working over. "'Let's change the wool to rayon,' they say, 'and reduce the number of colors. Then we can change the weave and adjust the warp to what we have set up.' The result is economical, but seldom beautiful," Larsen says.

Then there is what Stollman calls the "scatter-shot" approach to design. "The converters go up to a mill, or the mill people get together themselves, typically on a weekend or late at night, and run off a few random patterns on a power loom. But they all feel their design sense is as good as anyone else's. It just isn't so."

KEEPING CHANNELS OPEN

Part of the trouble between designers and mill men, both designers agree, is the result of misunderstanding. Mill managers have the idea that the designer wants to be free of all restrictions—given complete freedom for his creative whims. He is regarded as a prima donna who seeks the perfect piece of cloth.

In consequence, many mill people feel that consulting a top designer is useless. More than likely, they reason, the designer will give you something too complicated to make good economic sense.

Both Stollman and Larsen emphasize that using good designers does not mean production problems.

They both say they welcome restrictions. They go so far as to say they feel a lack of artistic stimulation unless subjected to the hard discipline of production economics.

As Larsen puts it: "I'd welcome a man coming to me and saying he has so many looms idle, or even such and such a warp, so many harnesses. This makes sense. A good designer can work within limitations if he has to."

Stollman concurs: "The mill owner's dream is one draw and a 100,000-yd. warp. Because everyone wants pretty much the same thing, we work within such limits. We try to cut down on the allocation of looms to any particular production program by restricting the number of warps in use. By changing colors, tying in on the warp, and changing the weave design but not the threading, we can produce an infinite number of novel designs. We have to work within the technical limitations of the manufacturer, but within them we give free play to our sense of color."

What can you expect in design from Americans in the next few years? Both designers foresee important new trends. For example:

Casual look—Continued growth of the "California look." Stollman predicts: "The ingenuous American approach to design will gain increasing recognition." Casual fashions, he adds, present a field in which foreign producers have a limited feeling. It's one field in which you can use your American outlook for continued profits.

Brightness—Livelier colors are likely to burgeon, Stollman thinks, because they appeal to "the kindergarten sense of appreciation everyone has for bright color."

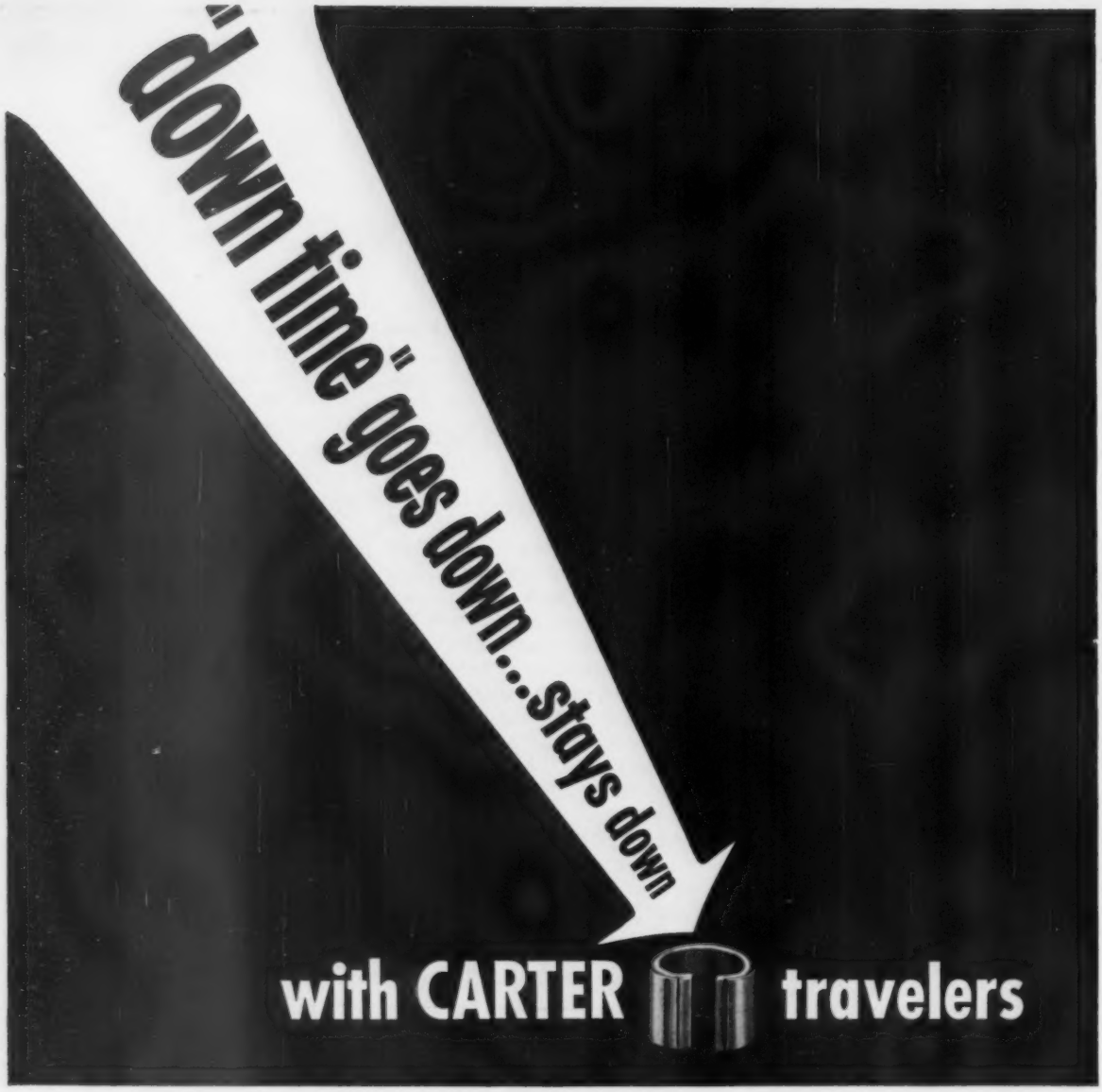
Sturdiness—Finer fabrics, the designers think, will soon sport heavier textures. Heavier yarn in cotton and man-made fibers will help bridge the seasonal dips in textile mill production.

Novelty — Increasing adaptation of new materials is also in the cards, these designers believe. Vinyl-covered fabrics are seen as one of many examples.

New uses—Heavier fabrics not previously used for apparel will come into prominence, these experts predict. Example: cloth of blanket or rug weighs for apparel.

Nonwovens—Greater use of this kind of fabric is also in the future, with designs applied by printing or simulated weaves.

Summing up, both designers think that with the natural advantages possessed by American consumers and textile manufacturers and the active technology that promises so many improvements, style consciousness on the part of today's mill management can help stem the import tide.



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How to Communicate by Listening

The higher up the ladder a man climbs in industry, the more listening he has to do. That's why you'll do yourself a big favor—right now—by learning the delicate job of listening—listening well.

IF YOU can talk skillfully and persuasively, you've got a priceless asset. But listening at the right time is just as important as talking at the right time. And listening, like talking, is an art.

Skillful listening makes other people talk well—makes them believe that their own monologue has been a discussion or conversation. They're right—if you've listened actively and helpfully. In fact, if you're a good listener you can win a reputation as an effective communicator without opening your mouth more than half a dozen times in the course of a discussion.

People often pay a high price for talking when they should be listening. The price they pay bears out the truth of the old saying: "Silence (at the right time) is golden." That's why it's sometimes said that listening wins more friends and influences more people than talking.

In a sense, active listening is conversation. The eyes of the talker and listener meet. The listener's face and hands signal acceptance or denial, warning or enthusiasm. He shows amusement, grief, anger, annoyance, agreement, disgust, joy. He gives the impression that an attentive ear sticks out all over him. His manner invites confidence. It welcomes a bond between talker and hearer. It tells the talker, silently, that what he has to say is well worth saying—and well worth listening to.

Adapted from one chapter in the "The Art of Persuasive Talking," by Lynn Surles and W. A. Stanbury (McGraw-Hill Book Company, Inc., New York. 1960. $4.95)

WHY PEOPLE TALK

People talk, of course, for many different reasons. And whatever their reason may be, more often than not there's good cause for you to listen—some gain in store for yourself, or some help you can give them.

Look at a few of the reasons why people talk:

- To make friendly contact.
- To pass ideas and information along—and to explain or instruct.
- To persuade.
- To entertain.
- To shape half-formed ideas.
- To solve problems.
- To relieve pent-up emotions.

You could probably call to mind scores of other reasons, much like these, from your own experience. Every one offers good opportunity for active, creative listening—listening that will help the talker, and listening that will help you too

RULES FOR LISTENING–TO HELP OTHERS

To a man who has problems, troubles, puzzles, or worries, the good listener is a rich resource. The helpful, sympathetic ear is what people often look for in their bosses and their associates, sometimes in their subordinates, and always in their friends. If you want to be the kind of supervisor to whom people turn when they need help, these six rules will guide you:

1. Take time to listen—Somebody asked an expert not long ago, "What's the secret of labor's advantage over management these days?" The expert replied, "Listening. Management is just too busy to listen. It can't be bothered. Labor leaders take time to listen." Don't pass your listening responsibilities (and opportunities) along to someone else. Do your own listening, even if it does take time. Consider it a compliment that the person came to you."

2. Let angry, impassioned people talk themselves out—Chances are, they'll reason themselves into a sound position after a while.

3. Signal your attention to the talker—This is easy. You can repeat snatches of his spiel from time to time—words and phrases that you feel are important to him. You can come in now and then with a "Yes, I understand," or "I'm glad you told me that," or a plain "Uh huh." You can nod your head in agreement, or wag it in amazement or doubt. You can gesture with your hands. You can even let certain pauses pass without interruption, thus making them expectant and inviting your talker to go on.

4. Let a worried man talk himself out—A good listener is indispensable to a man who has heavy responsibility. Listen helpfully: no advice, no judgment, no interruption. Just attention.

5. Steer the talk in helpful directions—Suppose, for example, an acquaintance of yours—maybe a subordinate—has failed in some project or is disappointed at the way something has turned out. He comes to you to unload. He blames himself and, in talking to you, reveals

things that would be harmful or even ruinous if made public.

What can you do? Steer the talk into constructive channels. And do it quickly. Don't hesitate to break in. How? With comments or questions like these:

"I begin to see the fix you're in, Walt. Let's see now if we can find a direction that will lead you out of it."

"Things do look pretty grim, don't they? But they can't be as bad as they seem. Isn't there another side of the coin we can look at?"

"I'd rather not know those details. They're not really important now. The important thing is to find out where you go from here."

6. Leave decision making alone—As listener, you're playing the role of guide and helper—not decider. It's your task to bring the problem into the open and to throw light on it so your man can see it. But he must find the answer himself—all alone.

Suppose your man asks, "What should I do?" Don't tell him what you think. Instead, ask this question: "Well, what could some of the answers be?" Or "Why don't you review the facts for me once more—very quickly?" This way, you'll lead him up to his answer but not into it. In the end, he'll find the answer by himself. Having found it himself, he'll live with it. And he'll remember you warmly as a helpful listener.

4 RULES FOR SELF-HELP LISTENING

You've got two ears and one mouth. That's just what you need for doing half as much talking and twice as much listening. Why so much listening? Because nobody ever learned much while talking. Listening, on the other hand, pays big dividends in information, understanding, and performance. To make your listening dividends bigger and better, try these four rules:

1. Erase your prejudices—Even in this enlightened age there are too many people who let color, race, ancestry, appearance, mannerisms, and job levels come between themselves and opportunities to listen—and learn or enjoy. A foreman in a New York garment factory turns a deaf ear to a machine operator who wants to suggest a simpler way of doing a job. The operator is a Puerto Rican. The foreman thinks, "I know all about these Puerto Ricans. They're always causing trouble—street gangs, can't speak good English, and all that." So he lets his prejudice block an opportunity to save his company $5,000 a year in production costs.

2. Concentrate — Pay attention. Don't let other things distract you—rank, or action on the side, or your own concerns. Your failure to concentrate could keep somebody from getting through to you on a critical point or at a crucial time. For example, a vice president asks a foreman in a drop-forging shop a question. Simple yes-or-no answer. But the foreman gets flustered—this is top brass he's listening to. He hears the question wrong, says "Yes" when he should say "No." The vice president takes the wrong answer to the president. Result: a $7,000 loss because top management acts on misinformation.

3. Take it easy—Don't interrupt. Don't cut the talker off. If you're too worried about getting in your own two cents' worth, or so smart you think you don't have to listen, you're in for trouble.

4. Adopt the talker's orientation—Don't get so wrapped up in your own purposes and your own frames of reference that you don't hear what the other fellow is saying. To understand him and to get the real value of what he's saying to you, probe for his purposes and put what he says into his own frame of reference. See it his way.

MAKING OTHERS TALK–SO YOU CAN LISTEN

There are some people you have to draw out—lure into talking. If you don't, they won't say anything at all. And you can't be a good listener—or any kind of listener, for that matter—unless somebody says something.

Suppose you've got a shy, silent employee in your department. He never speaks up. In fact, he clams up every time you come around. Yet you feel there's more to him than he's willing to show. If you can bring him out, he'll be better off—and so will you.

What can you do? These things:

• **Put him at ease.** To do this, you have to know something about him. Your own sharp eyes and the comments of his friends and associates will give you some clues. Once you know the kind of man you're dealing with, snatch every chance to break through his barrier.

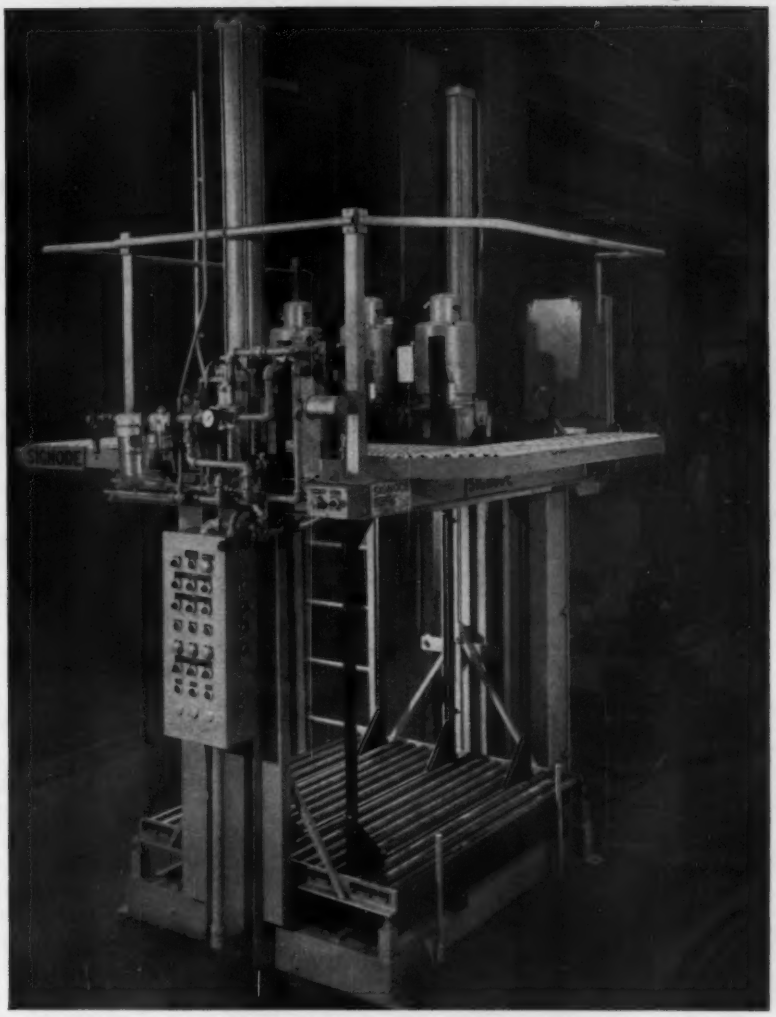
• **Move from small talk to meaningful talk.** Sometimes this just happens. Suddenly, without quite knowing how you and your troubled friend got there, you're in the midst of the problem. That's fine. It's been easy, and you're lucky. Most often, though, you'll have to lead him by the hand, ever so gently and subtly. You'll have to snatch some clue or hint in the small talk and contrive a transition from that to the area where the problem lies.

• **Probe with questions.** But do it gently and tactfully. Watch your man closely. If you do, you can sense the difference between the "red" areas, where the whole situation will explode if you blunder in blindly, and the "yellow" areas, where you can advance if you do it more slowly and cautiously.

• **Follow up after you've listened.** First, though, be sure your talker has talked himself out—has reached a plateau where he can talk calmly and rationally. If you're sure he's talked out, then go ahead with your follow-up. The purpose of follow-up? To help him find his way from problem to solution.

Now's the time to ask questions that will help your man explore his problem on a broader basis, or on a higher level, or from a new angle.

One word of caution: Don't snatch the first facts that come to light as the answer to your man's problem. They may lead you nowhere at all—or even in the wrong direction. So be sure you fish out all the facts with your follow-up questions. As he remembers them and brings them to light, your man will begin to weigh them himself. That way, he'll find his answers or come to his conclusion all on his own.



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New Signode Texomatic compression strapping machine

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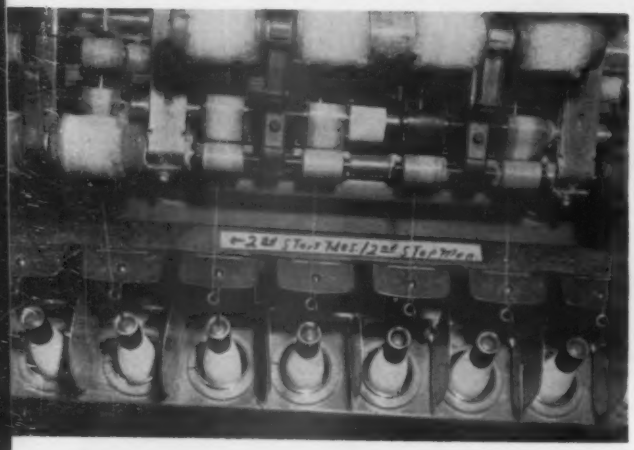
TEXTILE WORLD . . . COST CUTTERS



Cleaning 50% Faster

A planned cleaning schedule cuts cost and makes spinning easier at Beaumont Div., Spartan Mills, Spartanburg, S.C. This arrangement, plus a traveling frame and floor cleaner, has reduced cleaning time 50%.

Each frame is marked as shown in the photo to prevent any segment of the frame from being overlooked or duplicated during cleaning.

A schedule posted at the head of each frame lists the spinners' cleaning duties and spells out the time of day when certain jobs are to be done.

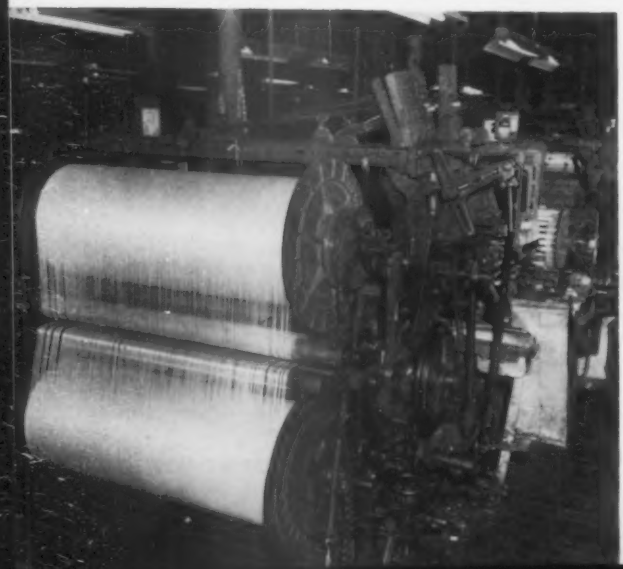
Duties include picking top and steel rolls; cleaning back guides, stands, and rails; running out guides; cleaning Pneumafil ducts; brushing rails and rocker arms; cleaning revolving top clearers.

Creel Cuts Handling Time 50%

A new method of creeling twister bobbins at winders (which cuts handling time 50% and eliminates yarn damage between twisting and winding departments) has been developed at the Dalton (Ga.) plant of American Thread Co.

The creel, made of lightweight angle iron (photo), is designed to accommodate pin boards. Each board holds 24 twister bobbins, and each creel holds 12 pin boards. As full bobbins are removed, empties are placed on the pins.

A major advantage is that winder tenders do not have to waste a lot of motion reaching for bobbins stored in conventional bins. Also, the pins keep the bobbins separate at all times, and there is little danger from bruising, grease damage, or tangling.



Loom-Beam Capacity Doubles

Coarse yarns that run off the loom yarn beam quickly can be made to run twice as long if two beams are used on one loom. This method was developed by Flightex Fabrics, Inc., Pawcatuck, Conn.

If, for example, a fabric is to be woven with 1,750 warp ends, two beams are warped and each beam has 875 ends. As beams are drawn in, entering hands select one end from the top beam and then one from the bottom beam. In this way, they're drawn through drop wires, harnesses, and reed.

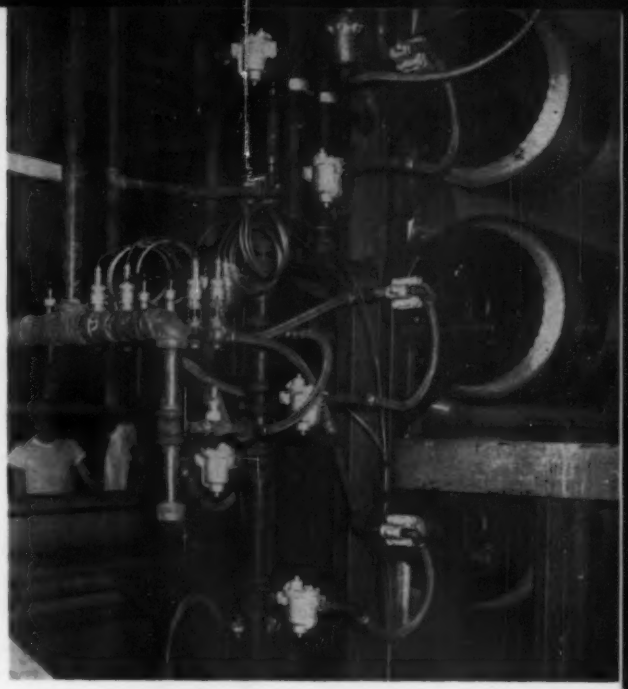
At the loom, one beam is placed in the let-off in the usual position and the second is overhead. Now warp run-outs are only half as many as formerly. On top of that, there's this additional benefit: Weave-room efficiency is increased 2%.

Controls Boost Dry-Can Performance

Controlled temperature on the first four cans of a 24-can stack increases the versatility of this drying unit for Mount Hope Finishing Co.

At the Henderson, N.C., plant (photo) are four direct-acting variable-temperature controls (Spence Regulator Co.). Heat-sensing units are placed in the cans at the opposite end from steam entry. The units are connected by stainless-steel tubes directly to steam-inlet valves. These valves may be set for any temperature desired.

By setting the first four cans at 160, 170, 180, and 190 (F.) respectively, Mount Hope can use the cans for drying pad-dyed goods without fear of direct-color migration. Costs for drying goods in this way are about two-thirds of tenter drying.



New Method Cuts Building Costs

Pickens Mill, Pickens, S.C., recently cut costs in building a new basement weave room by pouring concrete a new way, using a form on only one side (J. E. Sirrine Co., was the engineer).

Pickens removed earth to an average depth of 9 feet. The building was shored up during removal.

Earth under the original foundation was removed in 5-ft., 4-in. sections, level with the outside foundation. Then a wood form was placed almost flush with the inside foundation. Concrete was poured into the top of the form. As soon as the concrete dried, the form was moved to another section. The seam hardly shows where the sections join.

After the concrete hardened, the outside wall was waterproofed by digging around the wall.

One-Pair Hosiery-Packaging Machine

A recent development in in-plant research at Slane Hosiery Mills, High Point, N.C., is a one-pair packaging machine that requires the attention of only one girl. She just keeps tab on the operation.

Hosiery (men's and boys') is fed into the machine by gravity from an inclined conveyor. Socks come from the floor above. Then gears, chains, cams, and other devices go to work to package the socks.

Two girls at the other end of the machine place packaged hosiery into proper boxes for shipment. This machine has reduced one-pair packaging costs 50% over old hand-packaging methods.

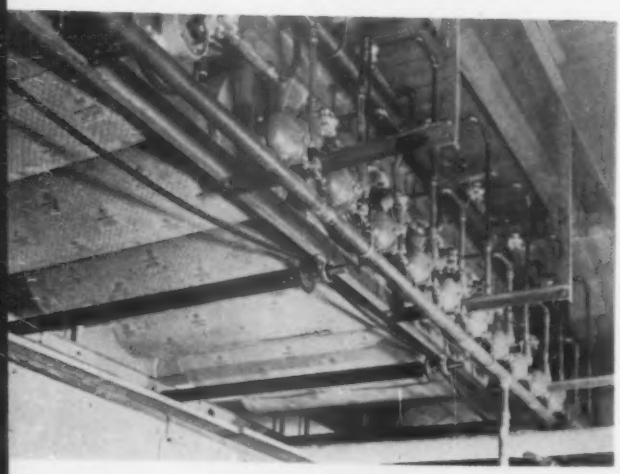
This machine is only one of several new machines that Slane has either developed or helped develop recently.

Old Sliver Cans Cut Handling 10%

At Mount Hope Finishing Co.'s Henderson (N.C.) plant, open stock pieces are stored in these old 12-in. sliver cans. Each piece thus has its individual cubbyhole and can be put in storage or removed without disturbing any other piece.

The plant maintenance force built angle-iron racks to accommodate seven tiers of sliver cans. The cans are spot-welded at contact points of the steel rims to tie them together into a rigid structure. Bins are numbered, and bin numbers are noted in the open-stock record book. That makes it easy to find any piece in seconds.

Management figures handling costs for open stock are down about 10%, and there are extra dividends in speed and convenience.



Boosts Dryer Production 20 to 25%

Installation of a new drainage system in condensate return lines in a 16-can dryer is boosting output from 20 to 25% at Cliffside Dyeing Corp., Paterson, N. J.

System (photo) is made by Sarco Company, Inc., of New York City.

The old traps were causing management costly trouble. For one thing, there was airbinding. For another, water-clogging.

Results? Uneven heat. Also, ill-functioning system cut down the drying capacity of the cans. Airbinding slowed up the initial heating of the cans at the start of each run, management reports.

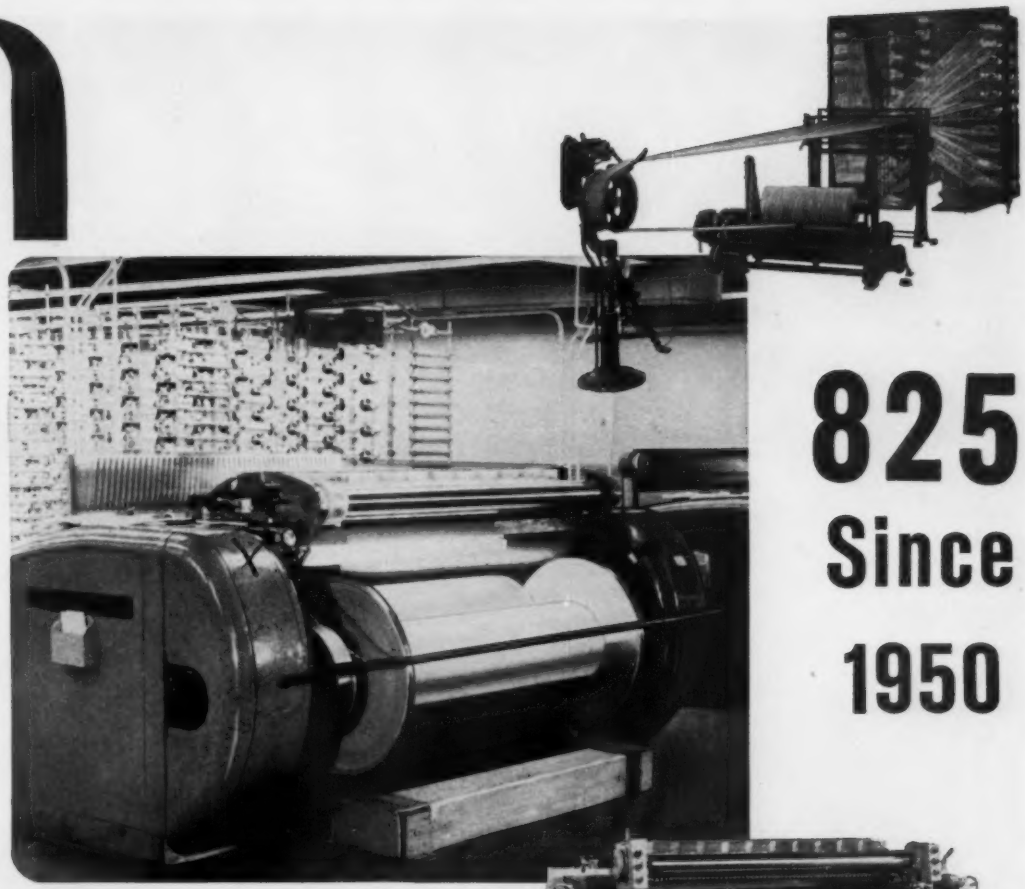
Today, those problems are history. Each dry can is equipped with a drainage unit, which consists of a float trap with a steam-lock release, plus sight glass and strainer.

$25 Hoist Saves $2,500 Annually

Mary Leila Cotton Mills, Inc., Greensboro, Ga., produces 500-lb. rolls of print cloth—and they are tough to wrap up for shipment. It used to take two strong men to wrestle the roll into a fabric tube and close the ends with wire. Now it's done by one.

How? It's simple. Master Mechanic J. L. Huey built a compressed air hoist out of odds and ends that jerks and stretches the tubing over the cloth roll in a matter of seconds. All the operator has to do is slip the tube over the roll, pull a cord (to activate the hoist), close the ends, and cut off the tubing.

The hoist is made from a 4-in. piece of pipe about 4 feet long suspended from an angle-iron beam attached to the ceiling. A reducing valve cuts the 125-lb. airline pressure to 40 pounds. Total cost of the rig was about $25. Savings: $2,500 per year direct labor cost plus 10% of the tubing formerly used.



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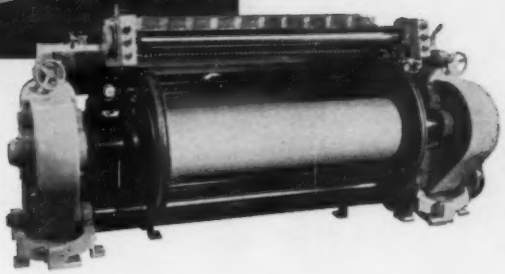

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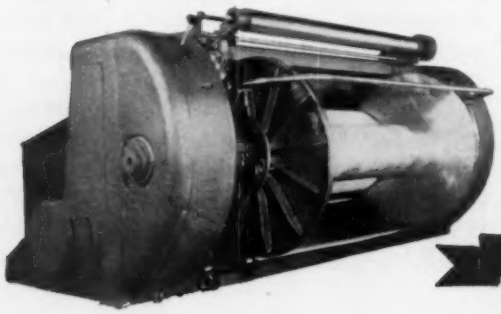

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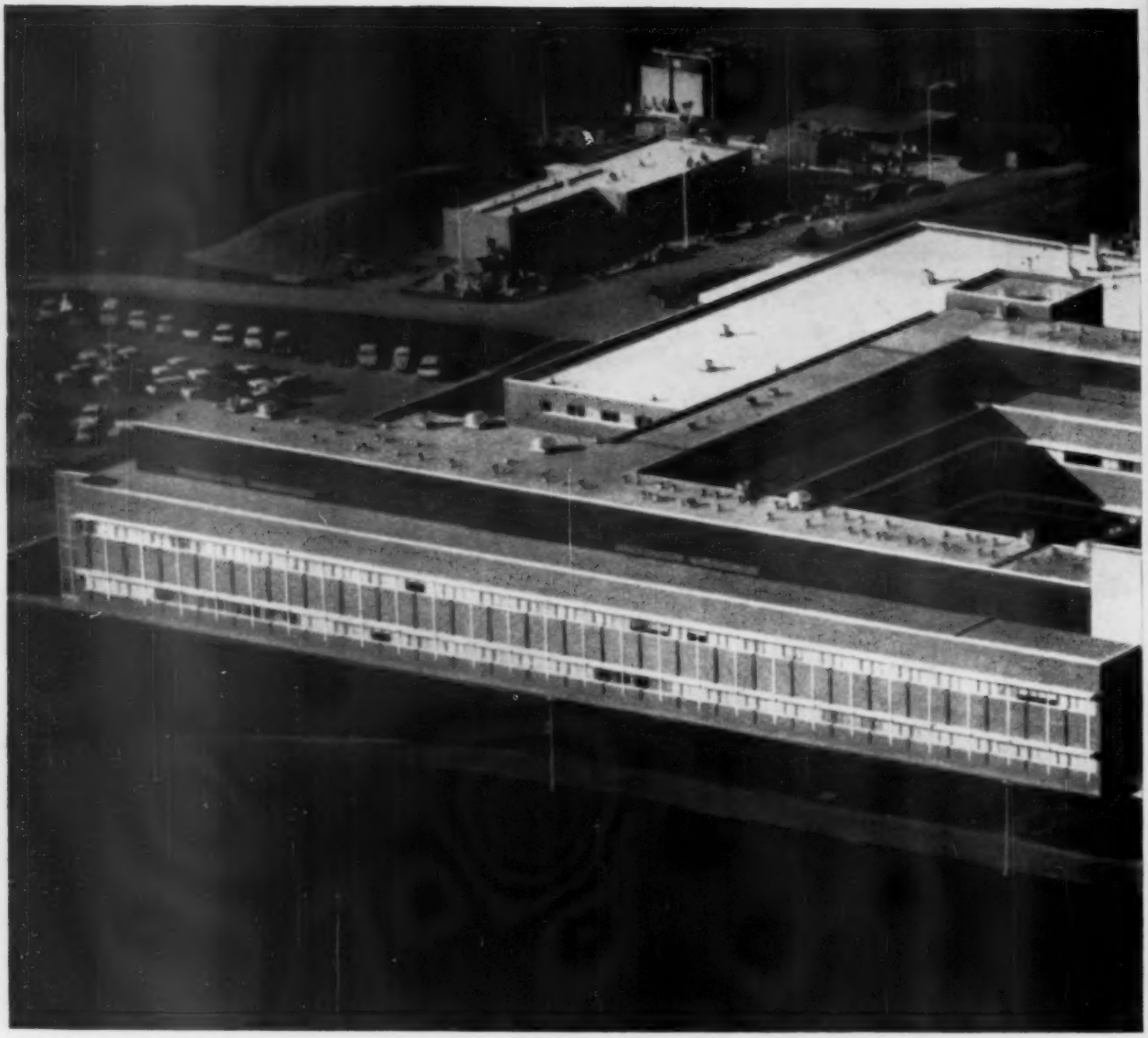

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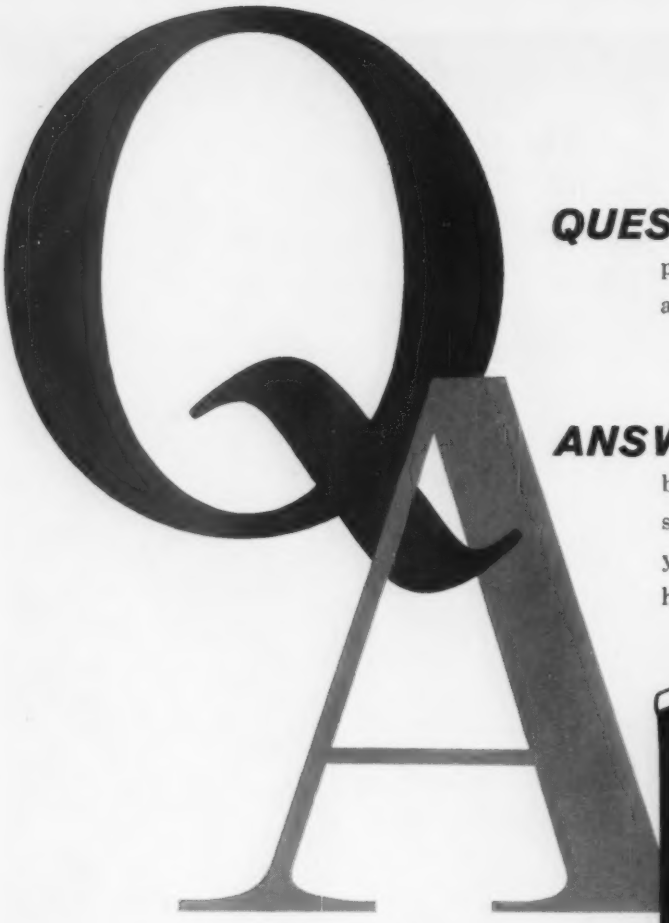

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What's New This Month in . . .

Fibers, Yarns, and Fabrics

By CAROL WILHELM, Copy Editor, TEXTILE WORLD

Fashion Takes Its '61 Look

U. S. buyers saw a "New Look" —reminiscent of the Twenties and Thirties—at the spring fashion shows in Paris, Rome, and Florence. The shows spell smaller sales for the American fabric market if trends are copied here—and they undoubtedly will be.

There is, however, a slight note of optimism. U. S. buyers—in Paris, at least—ordered models with wider skirts, longer jackets, and bias cuts, which should mean bigger fabric orders than last spring. But this will be partly offset by the knee-length skirts, sleeveless dresses, and short evening clothes featured everywhere this spring.

Look at the show news from Paris. Here's the report from Helen Avati, our Paris correspondent:

A sleek, up-to-date version of the flapper emerged from the new spring and summer collections.

Main features of the new styles are short, pleated, or flared skirts; slim, sidewrapped coats; capes, bias-cut dresses, and longer suit jackets. Designers showed matching chiffon overblouses with suits and two-piece ensembles. Deep cloches and pale stockings, further reminders of the 1920's, were also in evidence.

No. 1 fashion this season is silk crepe—in white, pastels, prints. Wools are extra soft. Sheer wools and wool crepes turn up in many dresses. Other fabric favorites are silk organdies and chiffon. These are often used both in dresses and in matching, unlined coats and jackets. Flower-printed chiffon—sometimes over a flower-printed crepe —will be seen everywhere. Prints —abstract or geometric, and often in black and white—also will be popular.

Top fashion color? Pink. Other favorites: white, apricot to orange, apple, lettuce and bamboo green, red, and sky blue. Navy blue and gray are used more than in past seasons, and navy is pushing black out of first place as the favorite color for after dark. Chocolate or a purplish brown—reminiscent of last fall—is also seen.

Here are some of the outstanding uses of fabrics in the houses of leading couturiers:

Dior—suits made of two-tone, reversible woolens. *Chanel* — smooth white wools. *Cardin*—soft-colored tweeds. *Balenciaga*—printed silk evening dresses. *La-Roche* — Canvas-weave printed woolens. *Patou*—two-color dresses with one color in front and another behind. *Ricci* — short, warp-print taffeta evening dress. *Lanvin-Castille*—blond, herringbone-patterned silk dress and coat.

Now look at the Italian fashion scene. For the shows in Rome and Florence, here's the story from our Gene Di Raimondo.

Nothing really new is seen in Rome. The influence of the Thirties is still in evidence, as it was last year. There are many two-piece ensembles. Jackets and coats are rather straight. Many of the designers line semi-redingotes. Shoulders are rounded, waists tend to be low. Plain fabrics, rather than prints, are preferred. Black and white are the dominant colors—with strawberry, bengal red, and a new terracotta red called Darling also shown.

Here are highlights of some of the Roman houses:

Luciani — looped fringes and braiding, always in self fabric. *Fontana Sisters*—Egyptian-inspired. Day dresses often come with sailor collars and flared skirts. *Gregoriana* —bright colors. *Gattoinoni*—white organza frills, lace trimmings.

And in Florence—clean, simple, uncluttered line. Designers follow one trend—accented slimness, often further accentuated by diagonal, oblique lines of cut or drapery. Skirts very short. Bodices soft, often with back fullness. Quite a few pleated skirts. Shoulders wide, rounded. Many capes are shown in varying lengths.

Designers use wool, lightweight boucles, Scotch plaid, jersey, Orlon, and soft print silk for daytime. For evening wear they use tulle, satin, lace, chiffon, organza, ottoman silk.

Favorite colors are pinks, purples, greens, beige, and red. The classics, black and white, are also in evidence everywhere.

At the high-fashion houses . . . *Simonetta*—long jackets. *Fabriani* —ample cape coats. *Capucci*—shoulders wide and rounded. *Veneziani*—leg-o'-mutton sleeves.

•

What Is Windway?

It's a new sheer casement fabric with 45% Vycron and 55% cotton in the filling and with 100% Dacron filament in the warp. It's being marketed by Shulman Fabrics.

The new fabric has a textured look. It's available in 15 colors and 48-in. widths.

No Ply, No Twist

A new sewing thread has been introduced. It's completely transparent. And it's called Western Transite. Western Fishing Line Co. (Glendale, Calif.) developed it.

The thread is neither plied nor twisted. It's made of 100% nylon monofilament. It has high strength, good abrasion resistance.

. . . *Turn the page*

Western Transite can be used for all sewing applications where nylon thread is now being used.

Leading manufacturers of draperies, bedspreads, bathing suits, and furniture are using it.

It's Got Creslan

Westinghouse Electric Corp. introduced a new automatic blanket last month. The blanket, called Royal Crest, features a 100% Creslan shell.

The blanket is offered in four models and in four pastel colors—pink, blue, green, yellow—and white. Suggested retail prices (for sizes ranging from the twin size to the king size with a dual control) start at $29.95 and go to $79.95.

Watch for It

AviSun Corp. will introduce its new oriented polypropylene film, Olefane "U," at the National Packaging Exposition in Chicago next month. AviSun expects to make the new film commercially available within the next few months.

They Wear a Label

Jordan Mills is now offering a collection of upholstery fabrics of 100% Coloray rayon. The collection carries a guarantee (stated on a label) for colorfastness for the life of the fabrics.

The color-coordinated program offers four fancy weaves—jacquard, broad stripe, tweed, and ombre stripe. The fabrics appear in ten colors and are coordinated to a basic plain, homespun-type weave that is available in 14 colors. The new fabrics are expected to retail for about $4.50 a yard.

Related to Cupioni

American Bemberg's specialty-yarns department has developed a new cuprammonium rayon called Tusson. Slated end use: blouses and dresses. The new rayon is related to Cupioni, which is used mostly in blends with cotton. But Tusson is said to be softer—and more finely and frequently slubbed. It has a dull luster.

Tusson is currently being blended with 25% silk in shantung and linen-like fabrics by Westerhoff Fabrics' Wedgwood Division.

The new yarn is featured in bright pinks and turquoise, clear cool blues and green, strong jade, and marigold shades.

Spring in Bloom

The new spring collection at Charles Bloom has five new offerings. And here they are—with highlighted features:

- The Open House collection, now color coordinated. Six color ranges are used. Six of the eight designs might easily be used in pairs. The collection, offered in Everglaze cotton, retails under $2.50 a yard. The fabric comes in 48-in. widths.
- Additions to the Larsen and Scandia collections. Now Larsen designs are following up the success of Mr. Larsen's Bright Future collection, which was introduced last fall. The new group includes an abstract, a modern floral, a geometric, and a quietly patterned casement. They retail for about $3 a yard. Scandia adds four Scandinavian designs. They are color-keyed to the previously introduced Stripe. They sell at $2.98 retail.
- Crescendo, a 49-in. cotton with the silken look. The new fabric features abstract prints and off-beat colors. They retail at $4.50.
- A group of upholstery fabric, 54 inches wide. The collection is called Furniture Fifty-Fours, is made up of two prints and one a plain color group. The group encompasses all expressions of design and color. Damasks are represented, along with provincial to contemporary. Vivid and subdued colors are used.
- Fabric with a Far East accent. And they are color coordinated with the Larsen Designs and many others. Three stripes, a plaid, and a plain are shown. They sell for $2.79 a yard.

Two for Four

That compact car you've been hearing so much about—the one that's capturing more and more of the market—may soon be sporting a different type of tire.

B. F. Goodrich Co. reports it has delivered pilot quantities of 2-ply, Tyrex-rayon cord tires to automobile manufacturers. The tires will be used as standard equipment for compact cars.

Goodrich says that the 2-ply tire has the same carcass strength as the standard 4-ply tire. It's equal in endurance and treadwear. It's lighter in weight, offers softer riding and cooler running.

Up Into the Blue

Farrington Texol Corp. has developed a special vinyl-coated nylon. It's being used in sound-attenuation and heat-insulation blankets for the new intercontinental B52H-Skybolt ballistic missile combination.

Adds Two to Family

Barth & Dreyfuss has added two firsts to its 1961 line of hand-screen printed beach towels.

It has added a group of $1.98 prints to round out its offering. And it has introduced a foam-rubber-backed terry beach and pool mat. This mat is offered in a 36x72-in. size. Two prints are available—a Hawaiian design and an abstract. Wholesale: $42 a dozen.

New Pouff Patterns

Princeton Mills has added two new designs to its high-pile Pouff collection.

One, called Shanghai, features the Oriental look. The 54x72 size wholesales at $27.50.

The other, called Gramercy Park, features a stylized sunburn pattern. The 54-in., octagon-shaped rug wholesales at $27.50.

Something's New . . .

. . . in the new spring line at Puritan Sportswear.

It's a full-fashioned, short-sleeved, knitted sport shirt. The shirt has a hand-fashioned, Italian-style collar and a ribbed sweater-type waist band. The fabric is 70% Creslan and 30% nylon.

The shirt is available in white, oat, wheat, sage, and King's blue. It retails at $12.95.

Rieter Switzerland

View of the very up-to-date Rieter machine works with foundry and metallurgical laboratory in Winterthur (Switzerland). Right: research building with test rooms, textile laboratory and showroom. Below: new material working shop, completed in 1959.

Rieter—the modern spinning machinery works

Rieter

American Rieter

On the North American Continent, Rieter is represented by its subsidary, the American Rieter Company, Inc., with headquarters in West Caldwell, N.J. (see left), and branch offices in the South and in Canada. The American Rieter Company, Inc. has a well developed advisory and sales organization, a special customers service and its own spare part store.

In the Rieter machine works in Winterthur (Switzerland) an experienced staff is developing and building efficient spinning machinery for processing cotton, wool and man-made fibres. About 90 per cent of the total production is exported. Hence, Rieter machines – key to top quality – are operating in more than 50 countries in the five continents. The main reasons for this success in export business are Rieter's 150 years of experience in the textile field, their systematic research work and the special technical advantages as well as the high grade quality of Rieter machinery. Thanks to its high efficiency, meeting the greatly increased demands of our time, the confidence of leading spinning concerns throughout the world has been gained.

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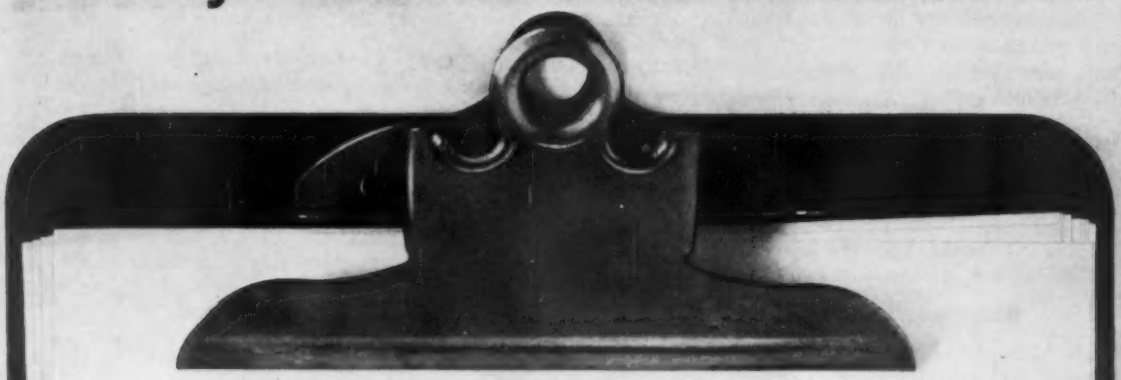

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TEXTILE WORLD . . . News from the Mills

Ames Textile Corp., Lowell, Mass., has increased its worsted sales yarn output of its Cleveland, Ga., plant with an addition of undisclosed size and cost.

Ansonia Mills, Inc., Taunton, Mass., has entered into a joint manufacturing and distribution venture with J. Elias Textielfabrieken N.V. of Eindhoven, Holland. The new firm will be known as Ansonia-Elias N.V.

Avondale Mills, Sylacauga, Ala., has announced that Avondale Mills, Inc., the sales agency for the firm's fabrics, and Comer-Avondale Mills, Inc., the sales agency for the company's yarns, have merged into Avondale Mills. The merger will make about $7-million of assets available to Avondale Mills.

Berkshire Hathaway, Inc., New Bedford, Mass., has received delivery on a limited quantity of Japanese spinning equipment for evaluation purposes. The frames were bought from the O-M Spinning Machines Mfg. Co., Ltd., of Osaka, Japan, and will be installed in Hathaway's Bourne Mills Div., in Tiverton.

Bigelow-Sanford Carpet Co., Inc., Thompsonville, Conn., has developed a way to print color and patterns on carpets, which it says is faster, more versatile, and less costly than present methods of dyeing carpets. The new process also enables the manufacturer to put patterns on carpets at relatively low cost. The company has been working on this process for three years, and has spent over $1-million.

Deering Milliken Research Corp., Spartanburg, S. C., has held an open house for all members of the Institute of Textile Technology at which it disclosed plans for a highly-automated pilot spinning plant. Plans for the new plant are being put together by ITT and Deering Milliken Research Corp.

Eagle Knitting Mills, Inc., Milwaukee, Wis., has opened a new 15,000-sq.-ft. plant in Shawano, Wis.

Excel Hosiery Mills, Union, S. C., has announced that its knitting plant was a total loss after a fire that was apparently caused by defective wiring. Its finishing operations will continue despite the fire. The knitting mill will be rebuilt as soon as possible.

Franklin Cotton Mill Co., Cincinnati, Ohio, has purchased a six-story warehouse from the May-Stern Co., for about $125,000.

Glenoit Mills, Inc., Janesville, Wis., a subsidiary of Botany Industries, has leased the 21st floor of a building at 111 West 40th St., New York City. Occupancy is scheduled for before May 1.

Greenville Finishing Corp., Greenville, R. I., has made plans to close its Taunton Dye & Print Works, Taunton, Mass., and expand operations at the Greenville plant. At the present time, the Taunton subsidiary will not be liquidated.

Greenwich Printing & Dyeing Co., East Greenwich, R. I., has closed, but will be kept on a standby basis for some time.

Hale Mfg. Co., East Killingly, Conn., has announced that the firm is consolidating its New England activities in the Killingly and Putnam areas. This decision means the ultimate closing of its Rockwell Woolen Co., in Leominster, Mass.

Hess, Goldsmith & Co., Inc., Wilkes-Barre, Pa., has announced plans to end operations at its Wilkes-Barre, Pa., plant within the next three months. The firm has had a plant here for 75 years.

Samuel Hird & Sons, Garfield, N. J., announced that it is closing its worsted fabrics manufacturing plant at Cornelius, N. C.

The Kendall Co., Boston, Mass., has announced that it will install 100 new 50-in. looms and two high-speed slashers in its plant at Pelzer, S. C. The modernization will cost $270,000.

Lowndes Products, Inc., Greenville, S. C., has completed current expansion and started production of nonwovens in the firm's plant at Easley, S. C.

Standard-Coosa-Thatcher Co., Chattanooga, Tenn., has completed a new bleaching department at the Rossville, Ga., plant at an estimated cost of $300,000.

Troy Blanket Mills, Troy, N. H., has discontinued manufacture of blankets, and has changed its corporate name to Troy Mills, Inc.

Tauber Woolen Mills, Inc., has been chartered in Pennsylvania to operate as parent company of Tauber Woolen Mills and Osmo Tanning & Mfg. Co., both of Spartansburg, Pa.

West Point Mfg. Co., West Point, Ga., has moved its cotton department from the general offices in West Point to quarters in a new building next to the firm's new warehouse in Fairfax.

Wexler Knitting Mills, Philadelphia, Pa., has leased a floor of the 19th & Allegheny Industrial Center, contracting for some 40,000 square feet of space for a long term lease at a rental of over $250,000.

Whitmire Mills, Whitmire, S. C., division of J. P. Stevens & Co., Inc., New York, N. Y., has broken ground for construction of a 6,000-sq.-ft. addition to its Whitmire plant.

Woodside Mills, Inc., Greenville, S. C., has completed a 25,000-sq.-ft. addition to the Liberty No. 2 plant and all new equipment is now in operation.

Correction:

TEXTILE WORLD inadvertently confused Avon-Dale Mfg. Co., and Avondale Mills, Inc., in the January item announcing a new plant in Olanta, S. C. Avon-Dale is the owner of the new plant in Olanta, not Avondale Mills, Inc.

By our method of reporting unemployment...

We're Giving The United States A Black Eye That Is Not Deserved

The way in which our unemployment is reported is giving the United States an undeserved black eye around the world. The broad concept of unemployment we use exaggerates the amount of unemployment in the United States as compared to most other countries. Our reporting system also falls short of presenting a balanced picture by concentrating on people who are idle, while neglecting jobs that are idle because people cannot be found to fill them. This editorial explains these defects and suggests improvements.

The *Monthly Bulletin of Statistics*, issued by the Statistical Office of the United Nations, has become a standard reference for international comparisons of economic performance, including employment and unemployment. Here, from the November, 1960 issue, is part of a table giving comparative figures on the rate of unemployment for the United States and a group of European countries:

	UNEMPLOYMENT RATE	
	Annual Average 1959	Jan.-June Average 1960
West Germany	2.4%	1.0%
Netherlands	1.8	1.4
Sweden	2.0	1.8
United Kingdom	2.3	1.9
United States	5.5	6.1

A Distorted Picture

If taken at face value the table clearly says that the United States is doing far worse in providing jobs for its citizens than the other countries whose unemployment records are listed.

But the figures are deceptive. They are made so, in part, by our government's use of a much broader concept of what constitutes unemployment than is used by most other countries.

Sweden provides a clear case in point. The table indicates that during 1959 Sweden had an unemployment rate of 2.0%, while the rate in the

United States was 5.5%. But a report from Sweden, published in the U.S. Department of Labor's *Labor Developments Abroad*, indicates that if they had used the same methods of calculating unemployment as we, the reported jobless rate in Sweden would have almost doubled. Thus a large portion of the gap between the unemployment rate in the United States and the unemployment rate in Sweden would have been eliminated.

Graduation To Unemployment

In general, countries listed in the table use registrations at public employment agencies as the basis for calculating their unemployment. Our Department of Labor, in making its sampling of unemployment, includes unregistered young people who are waiting for jobs or training opportunities as well as housewives who are looking for jobs in a general sort of way but who have not registered anywhere in search of them.

It used to be that graduation from college was regarded as a day for great celebration and rejoicing. But, because of the way the Labor Department does its counting of unemployment, it is now a day of sorrow. For unless our young people immediately rush off to jobs, they graduate into unemployment and swell our jobless figures.

While our government very expansively counts all the unemployed, there is no offsetting report on the number of jobs that are unfilled because no one qualified can be found to fill them. Currently there are many jobs in this category, and it is to be expected that there will be more as the technological revolution picks up momentum.

A properly balanced report on unemployment would include a record both of people who are idle, as conceived on some standard international basis, and jobs that are idle. A combination of the two sets of data would provide a much better indication of the economic health of a nation than unemployment alone.

The United Kingdom regularly collects figures on unfilled jobs as well as the number of unemployed. Thus it is not an impossible task to collect information on idle jobs. **For a fast moving economy, such as ours, the collection of statistics on unfilled jobs presents special difficulties. But this information is so important that Congress should see that it is added to our employment and unemployment records.**

A National Disservice

There is not the slightest inclination here to minimize the amount of unemployment in the United States at any time, or the crucial importance of doing everything possible to keep it at rock bottom. If the reporting of unemployment were simply for domestic consumption, it would be possible to make an appealing case for using a very broad conception of it. This is one way of underlining the importance of the problem.

But when, as is the case, international comparisons of unemployment are treated as key gauges of the effectiveness of different economies, we do ourselves an important national disservice by using an exceptionally commodious concept of unemployment. American travelers abroad can testify that they are continuously being called upon to explain why the United States does such a relatively poor job in providing employment for its people. This is an unwise and unfair burden to impose upon the nation. **We make enough mistakes of economic commission and omission without issuing reports that distort our economic performance to our own discredit abroad.**

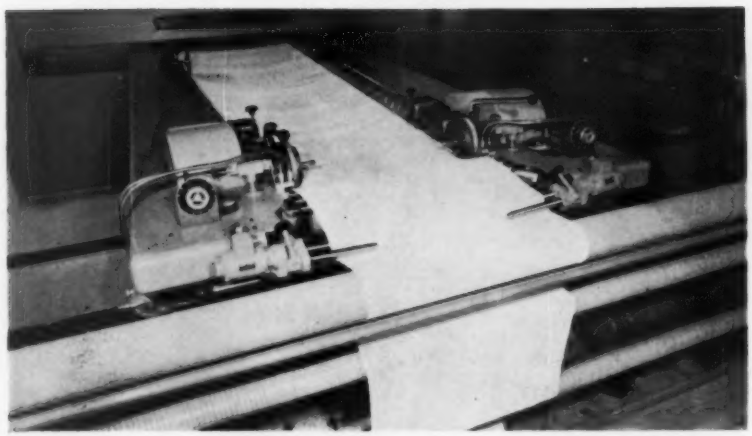
This message was prepared by my staff associates as part of our company-wide effort to report on major new developments in American business and industry. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or part of the text.

Donald C. McGraw

PRESIDENT

McGRAW-HILL PUBLISHING COMPANY

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.



Tenter Handles 120-In. Fabric

Tenter frame, designed by Bruckner Machinery Corp., handles all types of fabrics. But it has special features for knitted fabrics. The pin chain comes with needle bearings (totally enclosed) that need practically no future lubrication.

The drying chambers are 10-ft. unitized sections (any number can be put together). Each section comes with separate temperature controls, two fans for air circulation, and two radiators or two burners—depending on whether steam or gas is used for heat.

Special attention is given for selvage uncurling and pinning. Scroll rolls start the selvage opening. Then finger rolls with a smooth screw thread complete the uncurling. The selvage is pinned by brushes. A controlled overfeed is also built in for fabrics that need it.

Selvage cutter removes the selvage as the fabric comes off the pin conveyor. This waste material is then taken away by vacuum to a large storage tank.

Optical feelers (photo-cell) are used with delicate fabrics. **(Circle E-1 on Reader Service Card)**

Same Floor Space—More Bales Blended

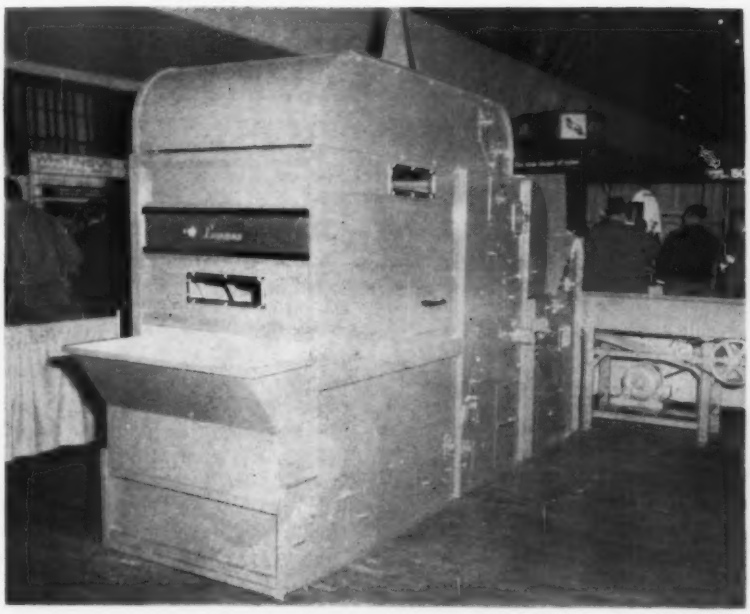
A blending feeder, developed by Lummus Cotton Gin Co., handles more bales than conventional units. New unit takes up no more floor space but is higher than other standard blenders.

The combing roll, mounted on top of the lifting apron, has triangular teeth. A detaching roll strips the combing roll which prevents cotton from being carried over the top. Net result: doubled capacity without increasing the machine length.

The combing roll picks and opens the stock thoroughly. Rejected stock is thrown to the back of the feeder. Result: more uniform blends.

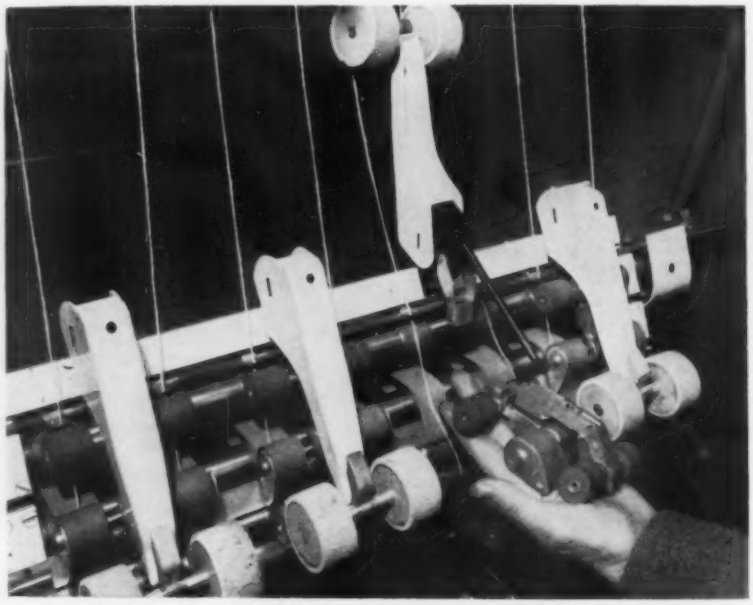
Because the feeder holds twice as much cotton, small mills can improve blends, large mills can blend 75 to 100 bales. **(Circle E-2 on Reader Service Card)**

. . . *Turn the page*



For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

Now—20% Stronger Yarn

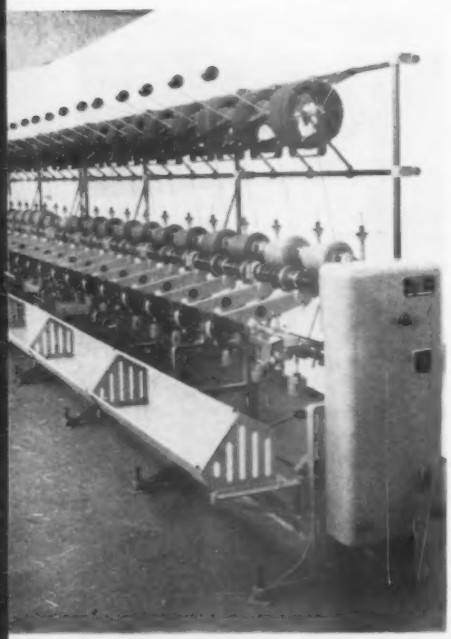


Drafting system, called Cavalla-Roth, uses tension on the long bottom apron for better spinning control. This unit was developed by the Dixon Corp.

In addition to tension on the bottom apron, the system uses an undulating apron-nose bar. Because of the special nose bar design and tension apron, the nose bar works close to the front roll. This reduces the distance between the apron and the front roll (the no-control area) to a minimum. As a result, yarn strength is up 20% over other drafting systems.

This changeover unit comes with a weighting method that eliminates springs, levers, and conventional weights. The system applies weight through the deflection of a ¼-in. carbon-steel bar. The unit needs no lubrication. The result is higher speed, longer draft, stronger yarn, and more uniform yarn. The changeover is available on 30-, 45-, or 60-degree roll stands. **(Circle E-3 on Reader Service Card)**

Skein to Cone: No Rewinding



This skein to cone winder, made by Gilbos, comes in 12- to 24-spindle units. It has a dual speed motor that provides for adjusting the winding speed from 110 to 525 yards per minute. A grooved drum guides the yarn onto a tapered cone.

Because the yarn tension device assures even tension from the beginning to the end of the cone, rewinding is unnecessary. Tension is applied before the yarn passes through a waxing unit. The winder is also available with a double waxing device.

An automatic stop motion acts immediately when an end breaks or the skein runs out. This action lifts the cone from the driving drum. All driving and control gears are built into the right hand side of the winder. The unit converts easily for winding from cops or other type of packages at high speeds. **(Circle E-4 on Reader Service Card)**

E-5—Jackstick comes with a sliding cuff for all treadle positions. One stick can be stocked for all harness levels, which reduces inventory requirements. Also, jacksticks of different lengths use the same interchangeable sliding cuff. The unit does not have nails or pins. Result: no more trouble or interference when the harness is raised and lowered during weaving. Louis P. Batson Co.

E-6—Continuous decatizing gives a uniform hand to the fabric from the beginning to the end of the run. The unit has a variable speed drive with speeds from 2 to 12 yards per minute. Because this decatizer is a continuous unit, the blanket is only 20 yards long. This blanket has a service life of 10 to 12 months. The unit has a heated cylinder and a moisturizing chamber. Units are available for tubular fabric. Costruzioni Meccaniche G. Sperotto Schio.

. . . *Turn to page* 140

NOTE

TO MILLS USING HIGH SPEED DRAFTING

IDEAL
Feathertouch
500

The recent announcement of the Ideal Feathertouch 750 2 Delivery Frame does *not* mean the abandonment of the Ideal 4 Delivery Frame. This 4 Delivery Frame has been, and will continue to be, the frame best suited for use in the majority of American mills and will henceforth be known as the Ideal Feathertouch 500 4D.

The Feathertouch 500 is America's finest all-purpose drawing frame and has consistently produced tremendous quantities of highest quality clean sliver at low cost. Some of its features are

- Each frame has its individual drive.
- Each frame has its individual vacuum system with full length suction clearers on every roll.
- Ideal Electro-Magnetic Clutch eliminates pulleys, belts, countershafting, etc. and gives smooth starting and smooth instant stops.
- Ideal Patented Spacing Sections prevent bruising and cutting of fiber.
- Permanently sealed and lubricated ball bearings on all turning parts.
- Speeds of 500 fpm and over.
- Ideal Engineers lead in the designing and production of efficient drawing for all fibers and blends at all practical speeds.

for Carded Cotton
Combed Cotton
Finished Comber Stock
All Types Synthetics Blends

• SIMPLE TO OPERATE • SIMPLE TO ADJUST
• SIMPLE TO REPAIR

Ideal Industries, Inc.
Bessemer City, N. C.

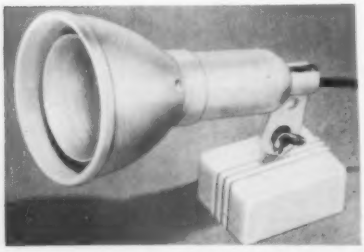
THE ORIGINATORS OF HIGH SPEED DRAWING

Equipment and Supply News

. . . *Begins on page* 137

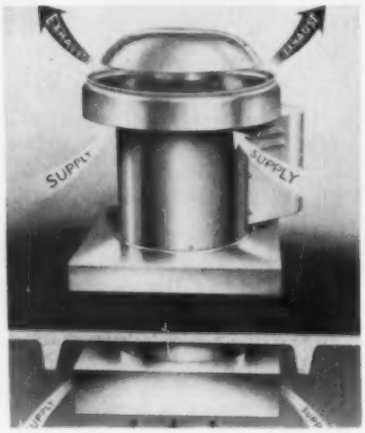
For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-7—Vacuum filter comes with a felt cartridge that is reusable. The Model 1125MV filter will remove particles down to 5 microns without restricting the flow. Oil fumes can also be removed. Flows up to 4,000 cfm. can be handled. The unit, equipped with petcock draining, is available in pipe threads of ¼ to 2 inches. Pipe flange styles go on lines up to 8 inches. Wilkerson Corp.

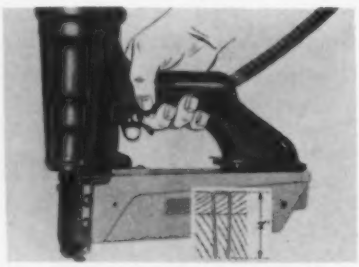


E-8—Magnetic-based lamp is designed for machine tools where work area lighting is acute. Two styles are available—a wide coverage of illumination, and a concentrated light. The magnetic base measures 2¼x1½x1 inches and weighs 10 ounces. But the holding power is 60 pounds. The base is covered with a polyvinyl chloride cover for maximum protection against oil and grease. Recarr, Inc.

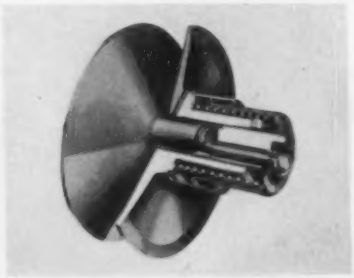
E-9—Bowl for air filter is transparent, yet will not break or shatter. It is resistant to solvents, oil, and corrosive gases. This air filter bowl takes pressure up to 250 psi. at temperatures up to 200 F. Shatterproof bowl eliminates need for bowl guards. C. A. Norgren Co.



E-10—Exhaust fan, called Twinalator, provides supply and exhaust simultaneously. The unit required only one opening, and one motor. Fresh air, which is delivered under pressure, can be directed by louvers or duct connections to specific areas. Clarage Fan Co.



E-11—Staple mailer drives up to a 2-in. staple. This unit, Model S-763, is designed with a positive magazine lock. The stapler takes a 16-gage, heavy staple from 1½ to 2 inches long. The unit works on air pressure of 60 to 100 psi. Fastener Corp.



E-12—Pulley for variable-speed drives is rated for 1 to 15 hp. The output speeds range from 141 to 2,200 rpm. These units utilize 1750- or 1160-rpm. motors using a 3 to 1 speed variation. The pulley takes a V-belt drive. Sterling Electric Motors, Inc.

E-13—Nylon harness eye eliminates metal to metal contact. This eye is made so that it contains the hook within its width. This prevents harness scoring and frame hang-up. Unit comes in two sizes. The small size works on frames with up to $\frac{7}{16}$-in. lumber. The larger size goes on frames with ½-in. or heavier lumber. These eyes use No. 8 and $\frac{3}{16}$-in. hooks respectively. Steel Heddle Mfg. Co.

E-14—Water faucet comes with a special self-closing and nonself-closing feature. Unit uses a silicone-rubber plunger that can be replaced easily without tools. This faucet is adaptable to distilled or demineralized water system. Barnstead Still & Sterilizer Co.

. . . *Turn to page* 142

TEXTURED IMPRESSIONS... *Unlimited*

Fabrics knitted on the Wildman Jacquard JSD circular knitting machine create lasting impressions in the outerwear line. UNLIMITED pattern range enables fabrics to be knitted that are classics in design and texture.

Double Piqué . . . Twill Back . . . Blister . . . Rib . . . Tuck . . . Two-Three-Four Color Welt Back Fabrics. Ideal for high production of unique fabrics. Ask for complete details on this new model, the JSD.

WILDMAN JACQUARD

WILDMAN JACQUARD CO. • 1210 STANBRIDGE ST • NORRISTOWN, PENNA. • MANUFACTURERS OF HEMPHILL BANNER KNITTING MACHINES

A subsidiary of Draper Corporation, Hopedale, Mass.

The only circular knitting machine using a true Jacquard patterning mechanism.

These Columbia-Southern Chemicals are used in the textile industry

chlorine • caustic soda • soda ash • hydrogen peroxide
sodium bichromate • potassium bichromate • sodium sulfate
sodium sulfide • sodium bicarbonate • ammonia • muriatic acid
calcium hypochlorite • perchlorethylene • trichlorethylene

These PPG developments advance textile technology

PPG's Chemical Division recently developed a continuous hydrogen peroxide cotton bleaching technique that reduces bleaching time by as much as 70%.

Another new process for bleaching cotton knit goods racks up impressive savings in time and materials.

PPG's Chemical Division maintains a modern, fully equipped textiles applications laboratory and a knowledgeable technical staff to help users make the best use of Columbia-Southern Chemicals.

Textile processors like doing business with Columbia-Southern. So will you.

columbia | southern chemicals
CHEMICAL DIVISION
PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER PITTSBURGH 22, PENNSYLVANIA
DISTRICT OFFICES: Boston • Charlotte • Chicago • Cincinnati • Cleveland
Dallas • Houston • Minneapolis • New Orleans • New York • Philadelphia
Pittsburgh • San Francisco • St. Louis • IN CANADA: Standard Chemical Limited

Equipment & Supply News

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E-15—Polyethylene tank, designed for mixing and storage, holds 350 gallons. The wall thickness is only $\frac{1}{16}$ inch but it is self-supporting. The tank measures 46x52 inches, and comes with a fabricated polyethylene cover. Advantages are easy cleaning, light weight, long service life, and complete resistance to most concentrated acids. These tanks are translucent and colorless. American Agile Corp.

E-16—Hydraulic traverse is self-contained and comes with electronic control. Uniform velocity with reciprocating-linear motion makes this unit adaptable for carrying foam mixing heads, spray nozzles, or material-handling equipment. Models are available with maximum strokes ranging from 48 to 144 inches. The traverse carriage takes up to a 400 pound load. Jennings Machine Corp.

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-17—Fabric folder operates at speeds up to 100 yards per minute. This unit folds fabrics at any point on the width of the cloth. When the operating procedure is modified, the machine will also open folded material. Cocker Machine & Foundry Co.

E-18—Basket strainer is designed to protect pumps, valves, and regulators. The unit works on steam, air, oil, gas, and chemical lines. They are recommended for suction and high- or low-pressure applications. Sizes range from 2 to 16 inches. These units come with clamped covers or bolted covers for pressures up to 600 psi. Baskets are brass or stainless steel with $\frac{3}{32}$-in. perforation. Strong.

E-19—Caster bearing brings greater rollability to Rapistan casters, and wheels with 2-in. treads. Double paths of rollers are retained in non-metallic cages. The cages are lubricated with lithium-based (non-oxidizing) grease. Rapids-Standard Co., Inc.

. . . *Turn the page*

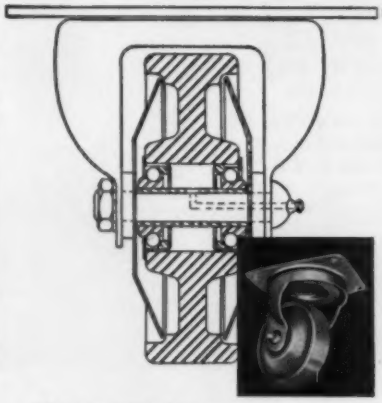
ACHIEVED!

Textile Casters That Won't Bind!

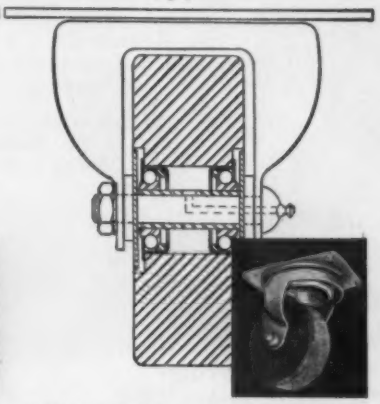
FAIRBANKS TEXTILE CASTERS

Never Before Such Sure-Fire Protection Against Threads And Lint!

Available In 2 Wheel Types:

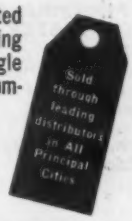


Precision cast, ballbearing semi-steel wheel—perfect concentricity; smooth, thick tread and big tread edge radius — protects floors and rolls and swivels easier. Threadguard protects in two directions: vertically, by tight fit to concentric inner edge of wheel tread; horizontally, by tight fit to molded step on web of wheel. Spacer washer, between threadguard and caster leg, eliminates V trap—allows lint and thread to fall free or, if caught, cleaning out without removing wheel. Available in 4 and 5 inch sizes.



"LAMILON", All-Plastic, ballbearing wheel permits standardization on one wheel for any section of the plant. Protects wood and concrete floors, resists sticking of ring travelers and gives excellent service in bleacheries and dye houses. Tight flush-face threadguard has very close fit in machined recess in wheel. Flush-face design decreases chance of falling lint and thread catching in wheel. Spacer washer, between threadguard and caster leg, eliminates V trap—allows lint and thread to fall free or, if caught, cleaning out without removing wheel. Available in 4 and 5 sizes.

Fairbanks patented "LOCKWELD" Steel Swivel Casters have eliminated the king-pin — major cause of swivel caster failures — providing stronger, easier swiveling, longer lasting casters. Available in single ball race, regular duty, sizes 2 to 6 inch; double ball race, medium-heavy duty, sizes 3 to 8 inch, with matching rigid casters.



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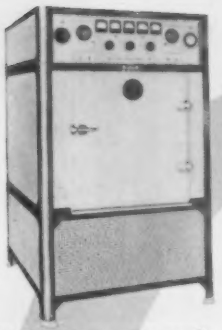

WEATHER-OMETER®
Reduces years of the deteriorating effects of outdoor exposure to sunlight, rain and thermal shock to a short laboratory test. Priced $2735.00 up.

FADE-OMETER®
Simulates exposure to Sunlight with controlled humidity in alternate cycles of light and dark, producing a quick accurate test of fading qualities. Price $1350.00 up.

LAUNDER-OMETER®
The standard test machine of the A.A.T.C.C. for determining the color fastness, shrinking, washing and dry cleaning qualities of textiles. Price $875.00.

Atlas-Ometers

Used all over the world for accelerated testing of textiles and dyestuffs, for colorfastness and wearing characteristics due to light, washing, weathering, abrasion, perspiration, etc. Required in many A.A.T.C.C. and A.S.T.M. test programs and Government specifications.

ATLAS ELECTRIC DEVICES CO.
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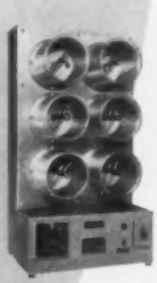
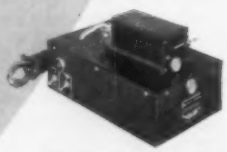
ACCELEROTOR®
Developed by the A.A.T.C.C. for evaluating wet and dry abrasion resistance of fabrics. Price $485.00.



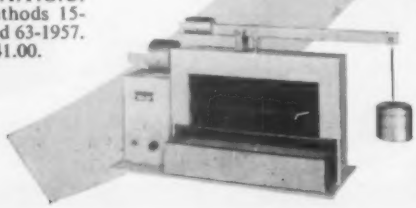
RANDOM TUMBLE PILLING TESTER
For the fast determining of the pilling and fuzzing characteristics of all types of fabrics. Price $485.00 to $890.00.

A.A.T.C.C. CROCKMETER
For determination of color fastness to crocking. $42.50 to $55.00.

PERSPIRATION TESTER
For testing color fastness to perspiration and water. A.A.T.C.C. test methods 15-1960 and 63-1957. Price $41.00.



SCORCH TESTER
Standard A.A.T.C.C. tester for damage caused by retained chlorine in fabrics. Price $230.00.



LABORATORY WRINGER and PADDER
For extracting controlled amounts of liquids to produce test specimens as required by many textile test programs. $255.00.

Equipment & Supply News

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For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-20 — Temperature controller, Model 450, maintains heat within ±1 F. The unit measures 4¼x4x5½ inches. Eight standard temperature ranges are available from 300 to 2,500 F. Controller features over-load protection for thermocouples. Assembly Products, Inc.

E-21—Casters for light duty are available in 3-, 4-, and 5-in. diameters. Capacities range from 75 to 200 pounds. Designed with self lubricating bearings, the casters come with hard or cushion-tread, solid-rubber wheels. Nutting Truck & Caster Co.

E-22—Pressure switch for water systems and air compressors comes in two enclosure sizes. The switch is rated for 1½ hp. at 150 psi. Unit has snap action and double break contact. Top accessible terminals are of the pressure-securing type. Furnas Electric Co.

E-23—Air purifier, called "Sano-Fresh" No. 17, eliminates odors, smoke, smog, mustiness, and other impurities. This unit uses activated carbon, the same system used in gas masks. This portable purifier, that weighs five pounds, plugs into 110-v. outlet. Roark Industries, Inc.

. . . *Turn to page* 146

SONOCO PRODUCTS COMPANY
CASE HISTORY NO. 3016

PROBLEM: Mildew on stored synthetic yarn

This Sonoco customer was using a wet process winding operation for synthetic yarn, then storing it for future use. The moisture in the yarn plus the storage conditions caused both the cone and the yarn to mildew. This made the yarn unsatisfactory for subsequent processing—a problem causing the customer serious loss.

Sonoco cones are always treated to resist mildew. However, this process required cones with even greater mildew resistance. Cones to meet this requirement were developed in Sonoco's research laboratories. Since these new cones were put in use there has been no recurrence of the mildew problem.

Technical service of this type is an added benefit when you buy from Sonoco. *Only Sonoco,* in its field, provides the continuous research, product development, and integrated manufacturing needed to meet the ever-changing techniques of the textile industry. Let Sonoco's more than 60 years' experience help you!

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APRIL 24-APRIL 28, 1961
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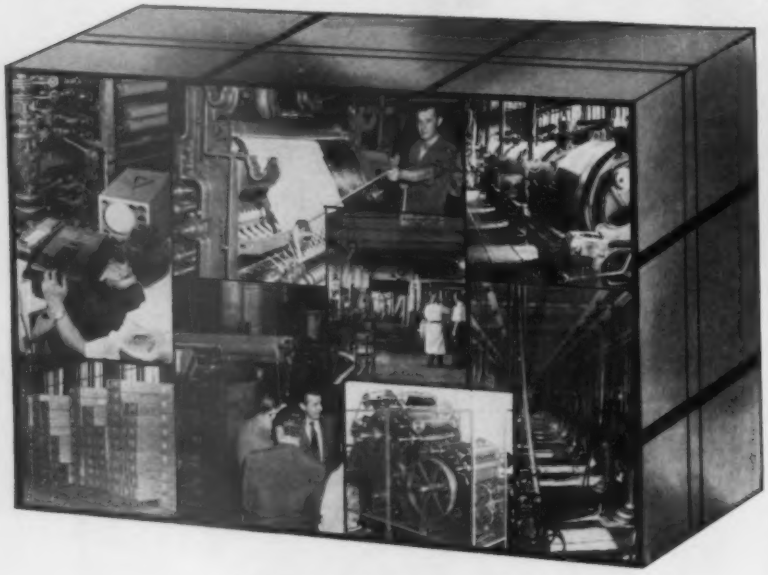
"coordinated production" is a "PACKAGE" PLAN



ONE AIM (TO SERVE)

In D & F carding machines, "Coordinated Production" means a better return on your investment through improved efficiency, higher product quality and greater yield. It applies to machinery (new or already installed), plus accessories and expendable supplies (condenser aprons and tapes, card clothing, metallic wire and spare parts). Standard or special, depending on your requirements, these items can all be designed, produced and included for you by us — when and as needed.

ONE RESPONSIBILITY (TO FOLLOW-THRU)

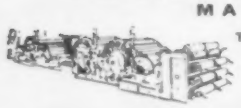
The sole responsibility for the complete package can be Davis & Furber's, backed by over a century of experience. Supported by D & F survey and service, in-the-mill analysis, D & F Engineers, Technicians and Erectors, you get the kind of satisfaction that only our aim (as stated above) can bring. Get the D & F "Coordinated Production" Package Plan because it is the insured way of achieving profitable performance throughout. Ask for full information.

ONE SOURCE (TO SUPPLY)

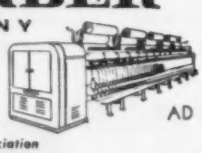
For satisfaction, investigate these products:

D & F Standard Cards
D & F Special Cards
D & F Card Clothing
D & F Condenser Aprons
D & F Condenser Tapes
D & F Metallic Wire
D & F In-The-Mill Technical Survey
D & F Preventive Maintenance Survey
D & F Modernization Plan
D & F Spare Parts Inventory

DAVIS & FURBER
MACHINE COMPANY



TEXTILE MACHINERY DESIGNERS AND MANUFACTURERS
North Andover, Mass.
Charlotte, North Carolina



AD 15-2.

Member — American Textile Machinery Association

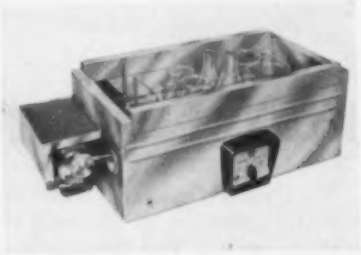
CARDS • SPINNING FRAMES • PREPARATORY MACHINERY • WARP DRESSING MACHINERY • FINISHING MACHINERY
MACHINERY MODERNIZATION • ACCESSORIES, SUPPLIES, CARD & NAPPER CLOTHING, GARNET WIRE, TAPES & APRONS
SPARE PARTS • TECHNICAL SERVICE & CONSULTATION

Equipment & Supply News

. . . *Begins on page* 137

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-24—Linear measuring device comes with a photo-electric sensor. The unit works on fabric, paper, or rubber. Models are available for measurement and control in yards, feet or inches. Because this measuring unit uses a photo-electric measurement, load drag is eliminated and higher accuracy is achieved. Unit has an automatic multipreset counter that stops production. Standard Instrument Corp.



E-25—Laboratory shaking bath is designed for continuous agitation and controlled temperatures. A universal tray holds all types of glassware and test tubes simultaneously. The unit is equipped with a variable stroke from 0 to 2½ inches, with variable oscillations from 0 to 400 per minute. Temperature control is accurate to ±0.5 C. through a range of 0 to 100 C. using hood or ice baskets. Labline, Inc.

. . . *Turn to page* 148

You can ... at lower costs ... with OXYTROL Low B.O.D. Starch!

A proven, economical answer to waste disposal problems — OXYTROL Low B. O. D. Starch has some 70% less B. O. D. (biochemical oxygen demand) than regular starches. Easily desized, OXYTROL is recommended for sizing a variety of yarns *at low solids levels.*

Compare the many advantages of easy-to-use OXYTROL Low B. O. D. Starch. Discover how you can save up to 20¢ a pound on your low B. O. D. material costs while obtaining nearly twice the effective weaving protection of ordinary starch sizes. See your Staley Representative for further information or write.

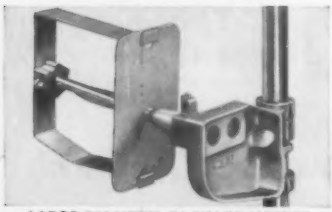
A. E. STALEY MFG. CO.
Decatur, Illinois

ATLANTA • BOSTON • CHICAGO • CLEVELAND • KANSAS CITY • NEW YORK • PHILADELPHIA • SAN FRANCISCO • ST. LOUIS

HERE'S HOW TO HANDLE ANY PACKAGE WITH McBRIDE VERSATILE PACKAGE HOLDERS

McBride Bowed Spring Spindle with cone and large package holders can accommodate every type of package used on Over End Take-Off today. Adapters feature the quick change design for instant placement or removal, to **cut down changeover time loss.**

UNIVERSAL CONE HOLDER



LARGE DIAMETER PACKAGE HOLDER

MERCURY SWITCH STOP MOTION

Let McBride study your creel requirements. You will be pleased with the improved efficiency, ease of operation, and rugged design of McBride creels. Creels for warping, weaving, winding, twisting, tufting, and knitting. Special laboratory warping units designed to suit your requirements.

Complete engineering service is part of every McBride installation

McBRIDE COTTMAN AVE. & WISSINOMING ST. PHILADELPHIA 35, PENNSYLVANIA

In Canada: Hugh Williams & Co., 27 Wellington St., E. Toronto 1, Ontario

148 CIRCLE 148 ON READER SERVICE CARD

Equipment & Supply News

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For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-26—Dissolver, Model 515-VHV, works on chemicals, dyes, paints, or other materials up to 50,000 centipoises. It's powered by a 10 or 15 hp. motor, which can handle up to 200-gal. batches. The impeller is 10 to 13 inches in diameter, depending on the motor size. Base dimension of the machine is 18x-24½ inches. This unit is designed with a hydraulic lift that has a rise of 42 inches, with a bridge length of 62 inches and a width of 15 inches. Unit operates at 600 to 1850 rpm. It comes with a built-in ammeter. Morehouse Cowles, Inc.

E-27—Steaming and shrinking machine works on flat and circular knit fabrics. Fabric moves through the unit on a conveyor belt that has a variable-speed drive. After steaming and drying, the treated fabric is folded. The unit is available in various widths from 31½ to 79 inches. Its length is 202 inches and the width is 44 inches plus the working width. A 1-hp. motor, operating at 20/40 rpm., drives the conveyor. Two 1-hp. fan motors operate at 1,500 rpm. Unit uses steam at 60 psi. at a rate of 66 pounds per hour. August Schoenenberg, Inc.

E-28—Vibration pad, made from fiber glass, isolates machinery vibration and eliminates lagging. The pads are supplied in 18x18x½ in. sheets, which are prescored at 2-in. intervals. These pads can be cut with a penknife. Consolidated Kinetics Corp.

. . . *Turn to page* 150

If you are concerned with knitgoods and smallwares production . . . this is the one exhibition in 1961 which you must not miss.

What is it? "Textile Recorder" International Knitting Machinery & Accessories Exhibition.

When is it? 11th to 21st October, 1961.

Where is it? Belle Vue, Manchester, England.

What's on show? The latest developments in machinery and accessories for every stage of knitgoods and smallwares manufacture . . . the products of over two hundred exhibitors from eleven countries occupying more than eighty thousand square feet of stands.

1961

MANCHESTER, ENGLAND

If you have not yet had a leaflet about this exhibition, write to the organisers :-

TEXTILE RECORDER (MACHINERY & ACCESSORIES) EXHIBITIONS LIMITED

Old Colony House, South King Street, Manchester, 2, England.

Booth

Originators of **STRIP-O-MATIC***

CARD CLOTHING

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CONTINUOUS OR ENDLESS

PERFORMANCE PROVEN CONDENSER TAPE

OVER SIX YEARS OF MILL USE HAS PROVEN THESE AMAZING ADVANTAGES:

- New Positive Splicing
- Width Tolerance ±.002
- Super Smooth Edges
- Increase Production
- Surface Won't Crack
- No Oiling Needed
- Yarn Uniformity Improved
- No Stretch—Less Sag
- Keep Square Edges
- Retain Full Width
- No Breaking In
- Permit Wider Range of Counts
- Fewer Ends Down
- Belt Hooks Hold

DIFFICULT BLENDS RUN BETTER ON

MICR-O-GRIND

THE NEEDLE POINT CARD CLOTHING

BENJAMIN BOOTH COMPANY

ALLEGHENY & JANNEY STS., PHILA., PA.

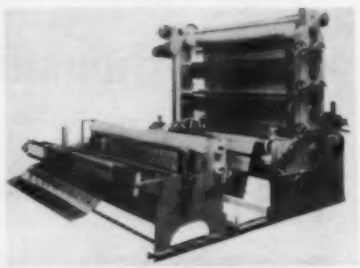
Booth

Equipment & Supply News

. . . *Begins on page* 137

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

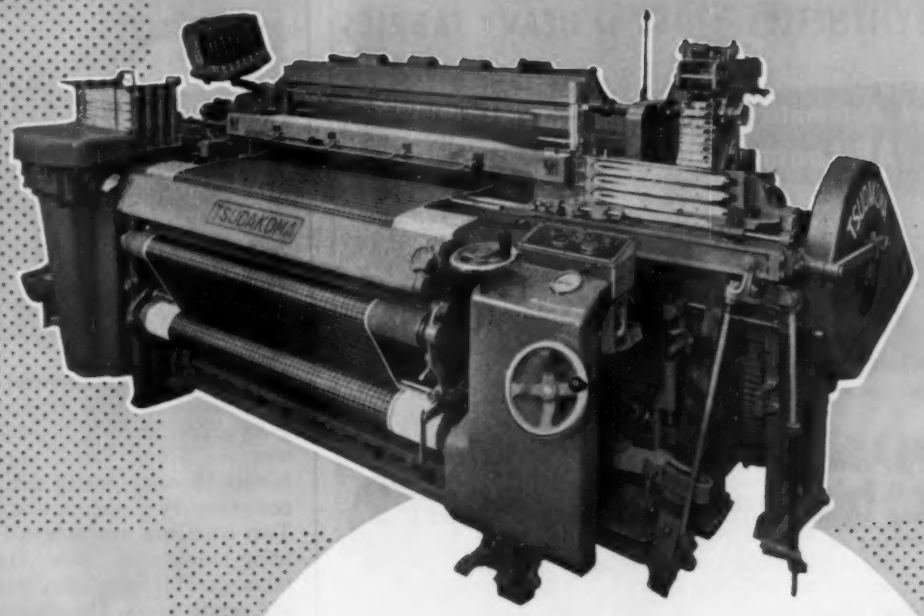
E-29—Vacuum cleaner, Model D-125, holds 11 gallons of liquid or 1½ bushels of dry material. The ½-hp. motor develops a water lift of 66 inches. Unit comes with a welded-steel tube handle, and a plastic hose (8 foot by 1½ inch). Multi-Clean Products, Inc.



E-30—Wet brushing machine makes brushing and finishing a one-pass operation. Fabric is immersed in a tank (which has a heating element) to put on the deep gloss. Then it passes through squeeze rollers, under three brushes and through a felt roller for after gloss. One brush is a hair brush, the other two are copper trimming brushes. This unit has a tension regulator with a 1 to 25 control range. Fabric speed adjusts by a variable-speed drive. Construction is stainless steel, ebonite or plastic. Netherlands Trade Commission.

. . . *Turn to page* 152

Tsudakoma



ツダコマ

Automatic Loom and Ordinary Loom
(for Silk, Rayon, Nylon and all Synthetic Yarns)

Dobby

Preparatory Machine

Throwing Machine
High Speed Bobbin Winder
Doubling Machine
High Speed Bottle Winder
High Speed Warping Slasher
High Speed Sectional Warper
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set new standards in

NARROW FABRIC LOOMS

Top speed, high quality, low cost production for
GLASS · SYNTHETICS · LIGHT or HEAVY FABRICS

High Speed Automatic
POWER-FAB Loom

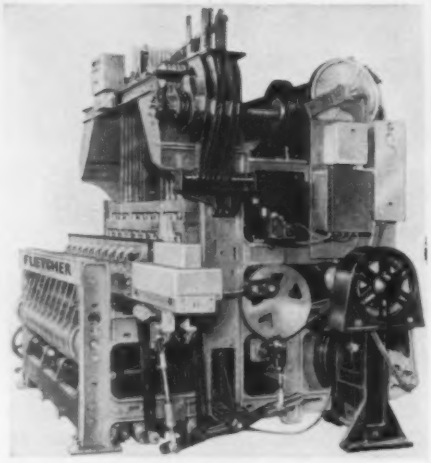
Uses less floor area. Provides maximum production per square foot. Permits increased operator work load. Greater Variety on same machine with minimum of changes.

5 foot loom 54" traverse warp beams

Quills 1¾" diameter heads

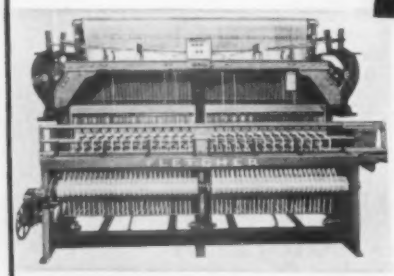
250 picks per minute for type I to IV government webbing, elastics or plastic webbing

300 picks per minute for light fabrics, ribbons, tapes or glass



TRY BEFORE YOU BUY with 3-month trial rental plan

Automatic High Speed
MULTI-FAB Loom



9 foot loom, extra heavy frame construction built for maximum production of quality narrow fabrics

Up to 250 picks per minute depending on fabric

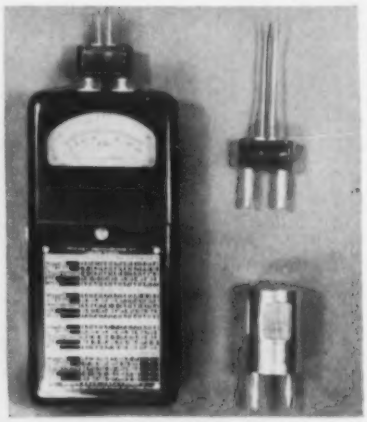
Warp length up to 10,000 yards per space

FLETCHER INDUSTRIES

Hasbrook Avenue and Beecher St., Cheltenham, Pa.

FLETCHER SOUTHERN — **SOUTHERN PINES, N. C.**

FLETCHER INDUSTRIES — **STATESVILLE, N. C.**

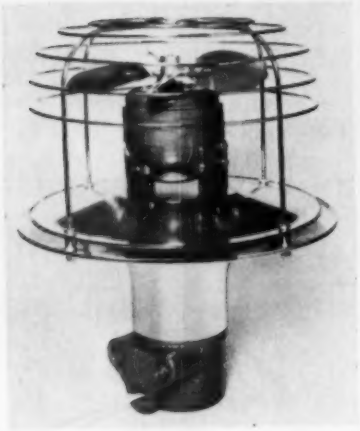


E-31—Pocket psychrometer (about the size of a pack of cigarettes) gives quick, accurate moisture content for fibers, yarns, cops, and fabrics. Special sensing devices are connected by a plug-in attachment. Two types are available for measuring moisture in fibers. One type takes care of cellulosic, polyester, and acrylic fibers. The other handles wool, nylon and other man-made fibers. James Hunter Machine Co.

E-32—Torsion balance has a dial control for weight loading. The unit, Model DWL-5, has an oil-dampened balance. Capacity is 500 grams. The coarse-weighing dial goes up to 90 grams in 10-gram increments. The 10-gram fine dial has 1/10-gram graduation. Stainless-steel weighing pan is 5 inches in diameter. Balance measures 11¾ x6x6¾ inches, weigh nine pounds. Torsion Balance Co.

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-33—Vacuum recorder is designed for bench-, desk-, or panel-mounted installations. Pressure ranges offered are 0 to 1000 micron Hg and 0 to 20 mm. Hg. The recorder measures 3⅝ inches wide by 5⅝ inches high. It operates on 115-v. 60 cycle, a.c. Hastings-Raydist, Inc.



E-34—Humidifier discharges steam in a 360-degree radial pattern. The unit comes with a steam solenoid valve, steam strainer, pressure gage, gate valve, and automatic control. It operates on 2 to 30 psig. and 115-v. Unit measures 13¾x12 inches. Bahnson Co.

E-35—Sizing machine operates at speeds up to 360 feet per minute. It works on cotton, linen, jute, and man-made yarns with a capacity up to 1320 pounds per hour. Yarns feed to the size box by means of a variable-speed drive, which controls stretch. The unit has automatic control for size temperature, size level, and squeeze pressure. Drying cylinders are stainless steel but the first cylinder is coated with Teflon, to prevent yarn sticking. Only 15 hp. of steam are required for full production. Tattersall & Holdsworth's Machineworks.

. . . Turn the page

Tennant-maintained floor in carding department of a large southern mill

Only the TENNANT System can keep your floors this clean

Chances are that your floors *can* look like this the year around . . . *if* you use the TENNANT SYSTEM.

And your maintenance costs will usually run less per year!

Floor seals last longer. Newly-developed TENNANT Floor Seals, specially designed for textile mills, last longer than any comparable materials we know of. This ends need for frequent recoating and reduces annual maintenance costs.

Makes floors easier to clean. The exclusive TENNANT process *actually increases dirt-resistance of the average textile mill floor by 300%*. Soilage wipes off easily . . . in a fraction of the usual time.

Keeps floors bright. The TENNANT SYSTEM's exclusive cleaning techniques make it easy to keep your floor attractive month-after-month . . . even under heavy traffic.

You'll also enjoy added benefits in improved safety and employee efficiency when your mill is a bright, pleasant place to work in.

Your TENNANT Man is a qualified floor expert, ready to give free estimate of savings possible in *your* mill. For full information, write G. H. Tennant Co., 737C N. Lilac Drive, Minneapolis 22, Minn.

TENNANT

The Textile Industry's Most Widely Used

FLOOR MAINTENANCE SYSTEM

Methods

Machines

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FLOOR MAINTENANCE SYSTEMS

QUALITY-RIGHT

FOR THE JOB!

Bond's quality Textile Leathers last three to five times longer than any comparable product because they're quality-right for the job. Bond draws on 75 years of experience to select the right leather, tan and cure it correctly, and manufacture it to optimum design and quality control standards for maximum job performance.

And Bond's quality pays off by eliminating wasteful stoppages and expensive loom downtime.

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SINCE 1888

Including: BONDARON®—World's Best. The Leather With The Hair On. FLAT AND ROUND BELTING including waterproof flat leather belting. LEATHER LOOM SUNDRIES. • Jack • Lug • Bumper and Check Straps • Bumpers • Pickers • Friction • Filleting and Slab Leathers.

ACCESSORIES: Belt Dressing • Waterproof Leather Belt Cement • Picker Sticks

Write for Bond's new catalog L 160.

CHARLES BOND COMPANY

617-23 Arch Street, Phila. 6, Pa.

Equipment & Supply News

. . . *Begins on page* 137

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-36—Battery-charging control unit is designed for use with the Hi-Lo Charger. These chargers supply power to emergency equipment—fire alarm systems, emergency lighting, starting engines. The control unit automatically puts the charger on a high rate when needed. The unit take 115-v., 60-cycle current and converts the power to direct current operating at a rate of 3 amp. Exide Industrial Marketing Div.

E-37—Fiber glass box truck handles packaged goods, bolts of cloth, and dry or wet fabric. This watertight box is corrosion resistant and lightweight. These trucks, ranging in size from 16 to 21 cubic feet, can be steam cleaned, and will withstand temperatures from —40 to 212F. The units come with swivel or rigid casters, in a choice of 4- or 5-in., replaceable solid-rubber wheels. Hamilton Caster & Mfg. Co.

E-38—Electric pallet truck takes loads up to 3,000 pounds. It's powered by a 12-v. battery. The truck has two forward and two reverse speeds with a 4-in. vertical lift and lowering. All controls are built into the top of the steering handle. Turning radius is $64\frac{9}{16}$ inches with 48-in. forks. This unit measures $32\frac{5}{8}$x32x$73\frac{5}{8}$ inches. The pallet forks are 7 inches wide and come in lengths of 30 to 54 inches in 6-in. increments. When the truck is full, it travels at 2.7 mph. and can negotiate a 15% grade. Clark Equipment Co.

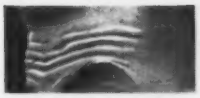
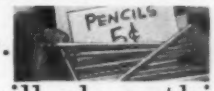
E-39—Machinery mount consists of a steel base plate—mounted to a vibration pad—and a leveling screw. This unit dampens and isolates vibration up to 85%. Mounts are also available without the leveling screw for units with a jack screw. Clark, Cutler, McDermott Co.

E-40—Adjustable speed drives now come in sizes up to 7½ hp. Speed ranges up to 100:1. Drives hold revolutions per minute within 2 or 3% of the set speed under varying loads. Power requirements are 230 volts, 60 cycle. Cleveland Machine Controls, Inc.

. . . *Turn to page* 156

it could be that you're

UNHUBINGERED

The symptoms are there. The furrowed brow.  The deep concern about production and results that are not quite good enough. You're beginning to notice the typographical errors in your secretary's typing (the doll). You wonder if you'll ever find the right textile starches. You harbor serious thoughts about quitting the game. 

Perish forbid! Chances are the right kind of help will clear things up beautifully. The first thing to do is contact the nearest one of the following:

Ira L. Griffin & Sons	Joe R. Myers	Carl F. Merritt	New York Office	Boston Office
P.O. Box 1576	1817 Dell Drive	Box 346-A	500 Fifth Avenue	192 State Street
Charlotte, N. C.	Columbus, Georgia	Piedmont, S. C.	New York 36, New York	Boston, Massachusetts
(*Phone:* **Franklin 6-5583**)	(*Phone:* **7-2244**)	(*Phone:* **Greenville 2-0424**)	(*Phone:* **Longacre 5-4343**)	(*Phone:* **Capitol 7-3268**)

OR OUR OFFICES IN CHICAGO, LOS ANGELES, AND KEOKUK, IOWA

Naturally, the Hubinger rep is going to suggest OK Brand Textile Starches. Also, he'll see that you get the benefit of Hubinger's technical staff and research laboratories, the best in the industry. And, if you should need a special starch for a special sizing, finishing or printing process, rest assured that it will be supplied. Like they keep saying in too many fancy magazine ads—good things begin to happen to you as soon as you get in touch with Hubinger.

OK BRAND

TEXTILE DIVISION

THE HUBINGER COMPANY

KEOKUK, IOWA

Why Wrinkle Your Brow
Over Wrinkles in Cloth?
get
MECHO AIR GUIDER

Streamlined, it is precision-engineered, and accurate to within one-eighth of an inch. It ranges from 1 to 400 ypm.

Mecho's selvage finger is highly sensitive, yet very strong. It will prevent double edges turning on cloth. Mecho's adjustment lever changes the selvage finger tension (to accommodate any cloth from the lightest to heavy #8 duck) . . . *while in operation!*
Everyone engaged in wet processing needs a cloth guider, so make yours Mecho and forget your troubles.

Mecho Air Guiders can do your job; they guarantee you "Miles of Cloth without a Wrinkle." They've been standard equipment in hundreds of finishing plants for a quarter of a century! Their efficient and reliable simplicity makes them simply great! Why wait?

Write today for this helpful FREE Mecho Air Guider Catalog.

THE Guider SPECIALTY COMPANY

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CIRCLE 252 ON READER SERVICE CARD

the ROTARY UNION*

Neat Heat for Revolving Drums

The Rotary Union is trim and compact. It takes only a few minutes to install and needs no adjustments or mechanical maintenance. It permits adjustment of rolls without disconnecting or repiping. The self-adjusting and self-aligning features of the Rotary Union help maintain a perfect seal for months and years without mechanical attention of any kind. Note also the PSC Model 70T Unitrap. This compact, large capacity steam trap has trigger-action condensate discharge which assures a steady flow of hot dry steam.

You can rely on this combination for protection against over or under dried warps and cloth. Write for Bulletins 700 & 800.

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Equipment & Supply News

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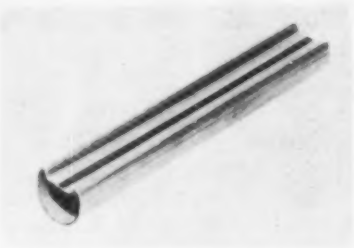
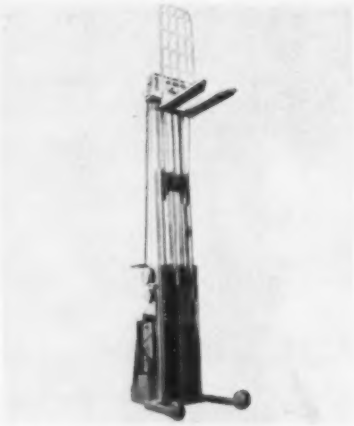


E-41—Conveyor features a specially shaped steel tubing combined with a V-belt. The V-belt rides in the top of the channel (see photo) and returns inside the tube. Speed goes up to 100 feet per minute. The crescent-shaped tube measures 1⅜ inch O. D., and weights 0.7 pound per foot. A specially ridged belt can be used to convey materials up inclines of 90 degrees. Republic Steel Corp.



E-42—Lift truck operates in a narrow aisle. It can lift to ceiling heights for maximum storage accommodation. The lift mast raises the fork to 184 inches, collapsed height is 89 inches. Because the forks can be tilted back four degrees, this unit offers maximum safety during transporting and stacking. Capacity of the unit is 3000 pounds at a 48-in. load length. Lewis-Shepard Products, Inc.

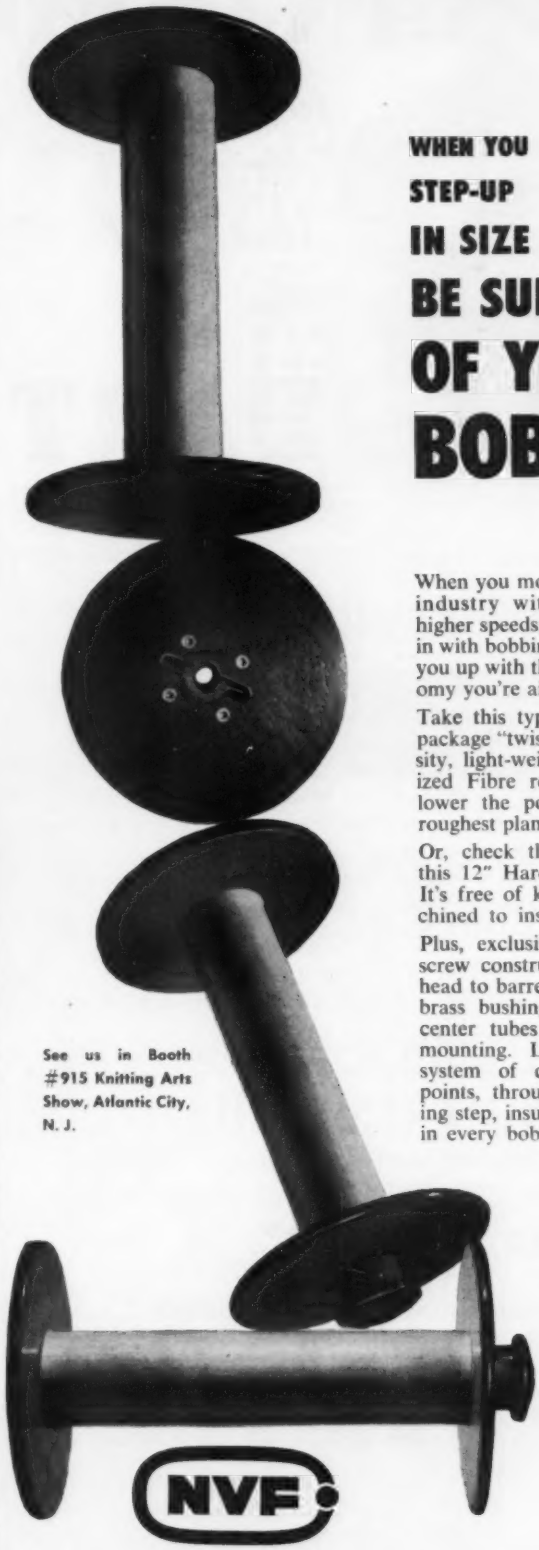
For more information on any of these items, circle appropriate number on the Reader Service Card, next to the back cover.

E-43—Hot-water converters come in 114 models with 2- and 4-pass arrangements. Units available have steam-inlet pressures ranging from 0 to 15 psi. Temperature ranges from 160 to 220 F. Construction is steel with U-tubes of Admiralty metal or copper. Other metals or alloys can be used for special applications as required. All converters are hydrostatically tested to 150% of capacity. Niagara Weldments Inc.

E-44 — Gravity-convection oven uses a control system that eliminates contacts, switches, and moving parts. This oven takes temperatures up to 650F. Four standard sizes are available with inside dimensions ranging from 2,744 cubic inches to 18,500 cubic inches. The unit comes with two adjustable shelves and with a stainless-steel or enameled exterior. Features neon pilot light. Blue M Electric Co.

E-45—Solenoids, called Super-T, use a laminated construction. It has a strong seating pull without an a.c. hum. The plunger has a large contact area between co-acting parts to provide trouble-free performance. Three sizes are available. Dormeyer Industries.

. . . *Turn the page*



WHEN YOU STEP-UP IN SIZE BE SURE OF YOUR BOBBINS

When you move in to challenge the industry with bigger packages, higher speeds, longer runs . . . move in with bobbin quality that will back you up with the efficiency and economy you're aiming for.

Take this typical Lestershire large package "twister"; strong, high density, light-weight heads of Vulcanized Fibre reduce bobbin weight, lower the power factor, take the roughest plant use and abuse.

Or, check the precision finish of this 12" Hard Rock Maple Barrel. It's free of knots, is carefully machined to insure dynamic balance.

Plus, exclusive Lestershire anchor screw construction for the tightest head to barrel joint in the industry, brass bushings or aluminum steel center tubes for accurate spindle mounting. Lestershire's ambitious system of quality control check points, through every manufacturing step, insures quality consistency in every bobbin you buy.

See us in Booth #915 Knitting Arts Show, Atlantic City, N. J.

Write for complete Lestershire Bobbin Catalog. Address Dept. BB-3.

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to give drip-tight leak-proof seal

greates[illegible]e in unions **DART**

For over 55 years the firm guarantee back of each and every DART UNION sold has been — *"if one should leak through we will give you two"!* The record reveals that less than 1 in every 100,000 has proven to be faulty. The extra wide bronze to bronze seats, precision ground to a true ball joint, mounted in heavy malleable iron pipe ends and protected by an extra heavy union nut, make a drip-tight, leak-proof connection WITHOUT EXCESSIVE WRENCHING time and time again.

Guarantee positive tight connections and extra long service on your pipe lines by using the DART GUARANTEED UNION.

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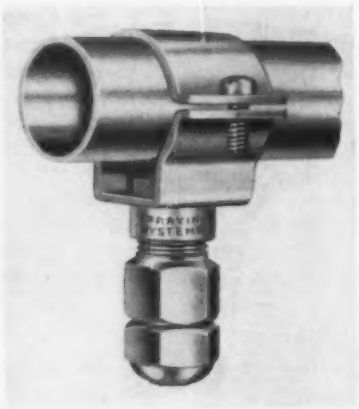
Equipment & Supply News

. . . *Begins on page* 137

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.



E-46—Split-eyelet connectors can be used on 1¼-, 1½-, or 2-in.-dia. pipe. Spray nozzles, gages, and hose nozzles can be connected by drilling a $1\frac{1}{8}$-in.-dia. hole in the pipe. A Buna-N gasket and compression bolts make a leak-proof seal. The connector handles liquid and gas at pressures up to 150 psi. Connectors eliminate the need for cutting, threading, or brazing operations. Spraying Systems Co.

E-47—Photoelectric verifier handles the Univac 64-character code or the standard 90-column, 37-character code. This unit, Type 2450, features adjustable right- and left-hand margin stops. Each card is in full view during the verification process. Remington Rand

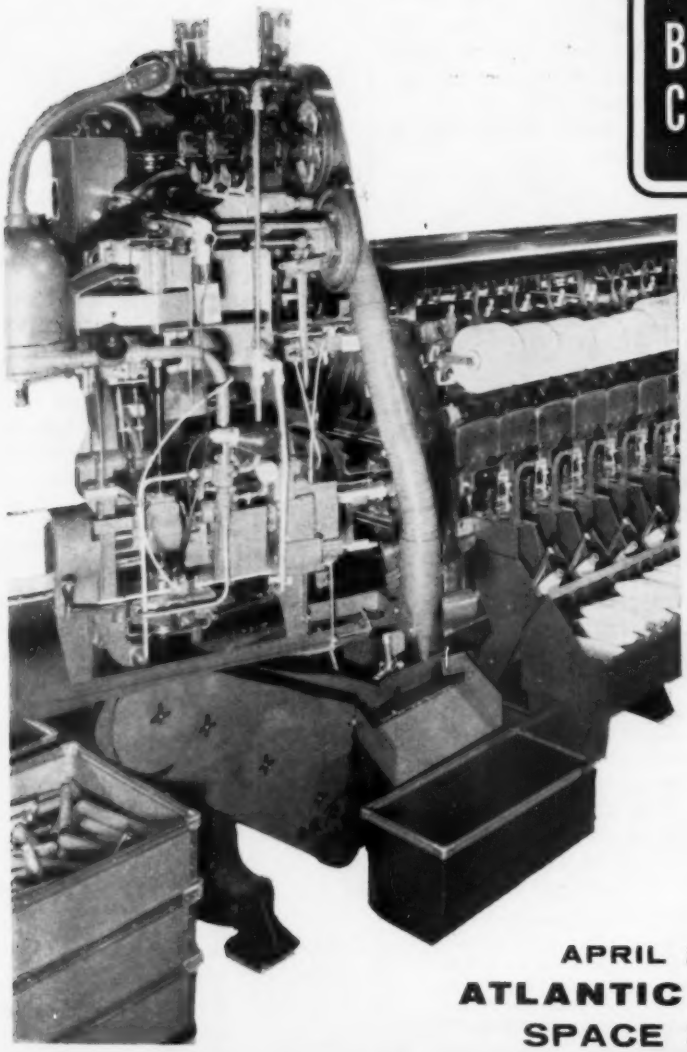
E-48—Strapping seal comes with a mastic compound that bites through slippery strap coating. The Micro-grip seal works on painted, waxed, or waxed Magnus and heavy-duty strapping in 1¼-in. widths. Two types are available, both in 22 gage. Type 114G is 2¼ inches long, and Type 107G is $2\frac{1}{16}$ inches long. These seals work on the B-1435 and N-1435 sealers respectively. Signode Steel Strapping Co.

. . . *Turn to page* 160

SEE IT IN ACTION!

WINDING 6° CONES AT THE KNITTING ARTS EXHIBITION...

BARBER COLMAN



TYPE FF AUTOMATIC SPOOLER

This machine will wind the new 6° cones (in this case, on flocked bakelite cores), these cones then being put on a knitting machine to demonstrate exactly how well they perform under actual operating conditions. Be sure to see how well these cones are wound on the Barber-Colman Automatic Spooler. Note the low, uniform, air-friction yarn tension — the firmness and evenness of the wind — the minimum of taping — the efficient yarn cleaning — the ease of operating the machine — and "Every Knot a Weaver's Knot." Consider, then, the significant advantages of using Barber-Colman 6° cones in *your* mill . . .

APRIL 24 to 28

ATLANTIC CITY, N. J.

SPACE 31 and 35

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES

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Here's how:

2 sec.
Locking pin out — top clamp off.

4 sec.
New clamp in position — pin replaced.

6 sec.
Locking pin out — bottom clamp off.

8 sec.
New clamp on — pin replaced — locking collar tightened. That's all — start testing!

With Scott's new quick-change clamp assembly, you speed up your test operations and get more tests per day. This is another reason why Scott Model CRE Constant-Rate-of-Extension Tester makes good sense and good savings in the laboratory or in production.

WRITE FOR CRE BROCHURE

Scott Clamps and Holding Fixtures are equally useful and time-saving on other Scott Tensile Testers. Ask for details.

SCOTT TESTERS

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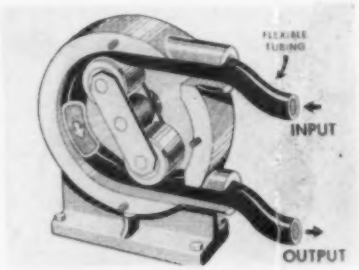
Equipment & Supply News

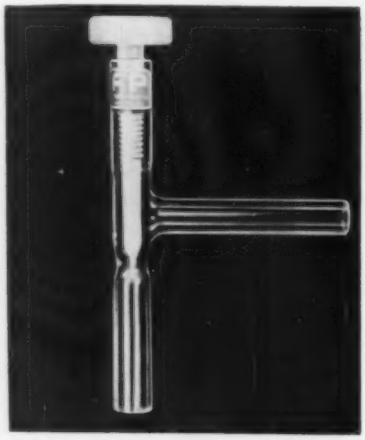
. . . *Begins on page* 137

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-49—Submersible pump for boosting line pressure is a turbine-type pump. This unit comes in capacities up to 8,000 gpm., 1,000 feet heads, and 350-hp. motor. It can be placed in lines ranging up to 16 inches in diameter. Mounting can be either vertical or horizontal (usually in a recessed location) with a by-pass hook-up for periodic inspections. Food Machinery & Chemical Corp.



E-52—Pump operates on a principle designed to eliminate all contact with moving parts by the fluid being pumped. The intake and outlet are one continuous flexible tube. This tube passes through the body of the pump where it is exposed to the squeeze action of ball-bearing rollers (see cut-away view above). A variety of liquids or gases can be handled by changing the tubing material—gum latex, Neoprene, or Tygon. Two sizes are available to handle up to 54 and 185 gallons per hour. Unit uses a ¼ hp., 115-v. motor. Randolph Co.



E-50—Glass needle valve has a special chemically inert Teflon valve tip. This device provides fine fluid control with continuous visual observation of flow. The maximum orifice is 0.05 inch. Valve will not corrode or leak due to wear. Fischer & Porter Co.

E-51—Gas-fired, infra-red burner, for research and testing, comes in a portable design. A replaceable propane gas tank supplies the unit for two hours. The radiant screen (made from Inconel) measures 4x6 inches. It has a face temperature that can be varied from 1,200 to 1,800 F. Heat output is 10,000 Btu. per hour. The unit measures 4x9x15 inches. Bryant Industrial Products Corp.

E-53 — Cartridge demineralizer comes with a capacity of 25 gallons per hour. This unit operates at pressures up to 100 psi. Space required is 6x8x26 inches. The standard cartridge has a removal capacity of 1,500 grains. Barnstead Still & Sterilizer Co.

TEXTILE WORLD . . .

Calendar

March

Southern Textile Overseers Association, spring meeting, Hotel Barringer, Charlotte, N. C., March 11

ASME, Textile Engineering Conference, Clemson College, Clemson, S. C., March 16 & 17

Textile Research Institute, annual meeting, Hotel Commodore, New York, N. Y., March 16 & 17

Textile Quality Control Association, spring meeting, Hotel Charlotte, Charlotte, N. C., March 23 & 24

American Cotton Manufacturers Institute, annual meeting, Fontainebleau Hotel, Miami Beach, Fla., March 23 to 25

April

AATT, monthly meeting, Della Robbia Room, Hotel Manger-Vanderbilt, New York, N. Y., April 5

Alabama Textile Manufacturers Association, 60th-Anniversary Convention, Buena Vista Hotel, Biloxi, Miss., April 12 to 14

Narrow Fabrics Institute, Inc., spring meeting, The Tides Inn, Irvington, Va., April 16 to 18

Institute of Textile Technology, Technical Advisory Committee and Board of Trustees, spring meeting, Charlottesville, Va., April 18 & 19

Georgia Textile Operating Executives, spring meeting, Hightower Building, Georgia Institute of Technology, Atlanta, Ga., April 23

Underwear Institute, annual meeting, Hotel Dennis, Atlantic City, N. J., April 24 & 25

45th Knitting Arts Exhibition, Convention Hall, Atlantic City, N. J., April 24 to 28

Georgia Textile Manufacturers Associations, Inc., annual meeting, Hollywood Beach Hotel, Hollywood, Fla., April 26 to 29

May

Alabama Textile Operating Executives, spring meeting, Thach Auditorium, Auburn, Ala., May 6

Material Handling Institute, Eastern States Show, Philadelphia Trade & Convention Center, Philadelphia, Pa., May 9 to 11

Joint Cotton Marketing Conference—Cotton Research Clinic, sponsored by the National Cotton Council, Peabody Hotel, Memphis, Tenn., May 16 & 17

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TEXTILE WORLD . New Literature

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

TEXTILE MACHINERY & AUXILIARY EQUIPMENT

L-1—Dyeing-machine brochure includes data chart, which lists dimensions. Photos and illustrations show mechanical breakdown of apparatus with separate sheet fully explaining specifications. Klauder Weldon Giles Machine Co.

L-2—Laboratory padders are featured in 2-color, 4-p. bulletin. Photos of available models with standard and optional features and dimensions are included. Other available production equipment is listed. Birch Bros., Inc.

L-3—Lever guns for greasing are discussed in Bulletin 732—punched for looseleaf binder. Two-color illustrations graphically detail method of operation. Model specifications and descriptions are included. Lincoln Engineering Co.

L-4—Cutting machines, a breakdown of their components with photos and detailed line drawings, are extensively discussed in Catalog 1160. Operation is clearly described. Quotation sheet included. Alfa Machine Co.

L-5—Spinning frame with new features is introduced in 4-p. folder. Photos of complete machine and separate parts are included with a line drawing of the frame and chart showing preventive maintenance. Davis & Furber Machine Co.

L-6 — Nonwoven equipment is chronicled in this 16-p. booklet with photos, charts, and graphs. Outstanding features of machines are pointed out. Also included is a labeled schematic flow diagram. Curlator Corp., Textile Div.

CHEMICALS & SUPPLIES

L-7—Alkaline cleaner compound for steam or hot tanks, designed for rugged cleaning, is the topic of Service Bulletin No. 17B. Methods of application and many varied applications are discussed. Oakite Products, Inc.

L-8—Nacreous pigments, their nature, applications, and qualities are fully related in this 2-color, 8-p. handbook. Three tables give a thorough breakdown of properties and formulations of nacreous substances. Mear Corp.

L-9—Organometallic compounds, their chemical and physical properties, are discussed in technical data sheet. Includes application for control of fungi, bacteria, algae; and odor control of fabrics. Metal & Thermit Corp.

L-10—Sealants are evaluated in 24-p. brochure detailing a survey of seven leading brands of Thiokol LP sealants. Elastic properties and performance potential are listed for each brand. Sonneborn Chemical & Refining Corp.

L-11—Latex, its physical properties and suggested applications, is described in an 8-p. booklet. Includes charts of copolymer, terpolymer, resin, creamed and centrifuged latex types. Naugatuck Chemical Div., United States Rubber Co.

ENGINEERING

L-12—Centrifugal pumps are discussed fully in Bulletin 721-6. Includes cutaway views of component parts, specifications, parts chart, construction details, mechanical data, and performance graphs. Goulds Pumps, Inc.

L-13—Sludge collectors for rectangular settling tanks are described in a 28-p. catalog including charts for determining tank capacity. Dimensions of tank models are given with line drawings and charts. Illustrated. Link-Belt Co.

L-14—Control drives are listed in a 12-p. specification directory punched for three-hole looseleaf. Line drawings graphically explain

. . . *Turn to page* 164

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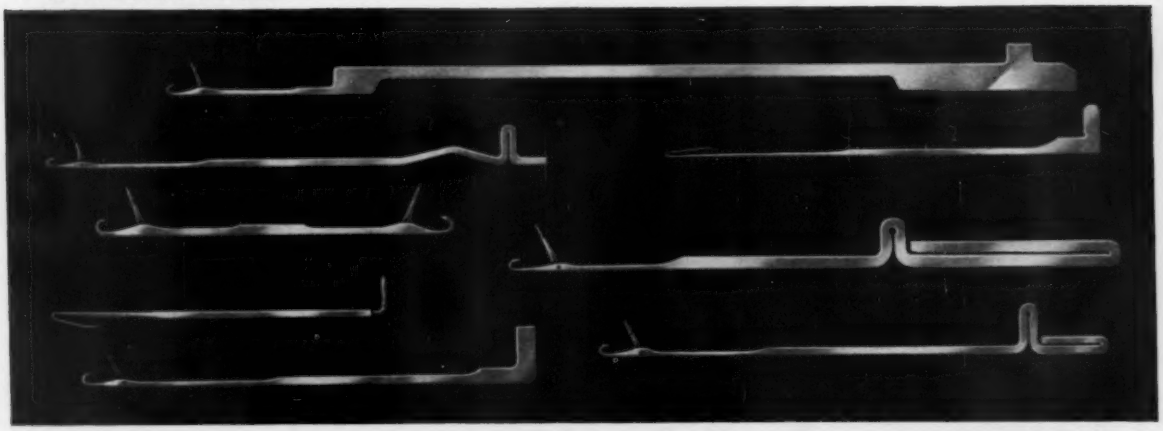

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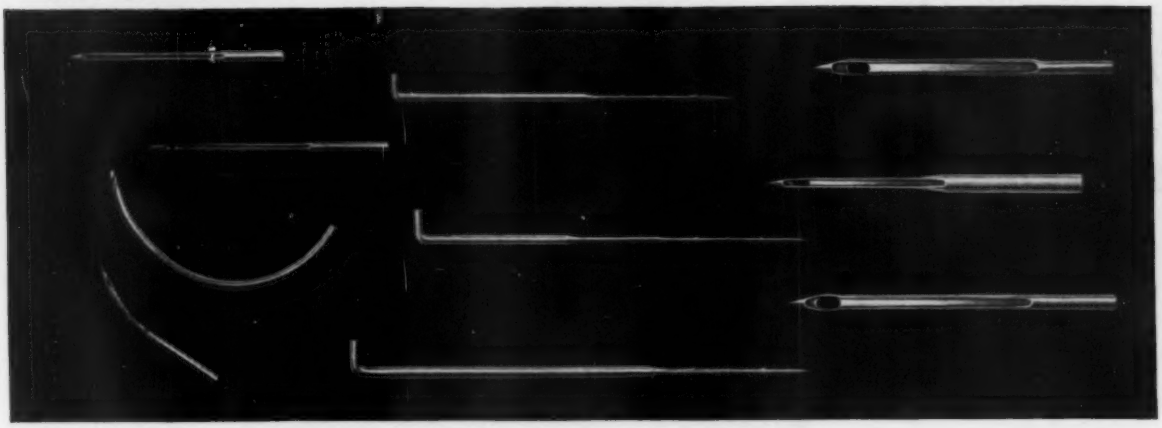

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TEXTILE WORLD

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. . . New Literature

. . . *Begins on page* 162

models, their component parts, typical arrangements, and operation. Bailey Meter Co.

L-15—Rotary joints that require no lubrication are illustrated with photos and line drawings in Catalog 310B. Included are charts that list completely the dimensions and working pressure ratings. Four pages. Barco Mfg. Co.

L-16—Processing equipment for chemicals and minerals are illustrated and described in this 8-p. Bulletin No. G3-B74. Charts for specifications and dimensions are included for each type machine described. Denver Equipment Co.

L-17—Rod ends and spherical bearings are illustrated and described in Catalog No. 101. Numerous charts are listed for easy understanding. Line drawings complete this detailed brochure. Split Ballbearing, Division of MPB, Inc.

L-18—Timing belt drives for mechanical power transmission are fully discussed in an 80-p. catalog. Drive-width selection curves, drive tables, and pulley and belt dimensions are indicated for several models. T. B. Wood's Sons Co.

L-19—Valve bulletin describes and illustrates assorted models of corrosion-resistant valves. Included are adaptable features, materials available, engineering specifications, and alloy-availability chart. Alloy Steel Products Co.

MATERIAL HANDLING

L-20—Savings is the keynote of this 4-p. report on mechanized personnel transportation. Worksheet, table of time and dollar savings, and depreciation schedule are included in this 2-color, illustrated brochure. Cushman Motors

L-21—Problems of material handling are discussed in 80-p. handbook, which gives pros and cons on cost-cutting ideas. Includes flow charts, battery calculator charts, and cost-cutting truck uses. Automatic Transportation Co.

L-22—Truck Catalog T-60 (with pictures, descriptions, and specifications for two-wheel and platform trucks) is offered in a 40-p., spiral-bound edition. A double-spread chart giving recommended load ratings is included. Fairbanks Co.

L-23—Fork lift truck, its dimensions and specifications, is described in this 6-p., 2-color fold-out. Capacity chart, dimension chart, line drawings, cutaway drawings, and photos give a clear picture. Clark Equipment Co.

L-24—Roller conveyor is the topic of this 8-p., 2-color catalog. Photos and diagrams illustrate features of wheel and live roller conveyors. Photos of actual installations. Specifications given. Rapids-Standard Co., Inc.

ELECTRICAL

L-25—Power centers are contained in a 12-p. manual punched for looseleaf folder. Discusses motor starting and control, specific requirements, power switching, motoring, circuit relaying, and maintenance. General Electric Co.

L-26—Motor controller is featured in 8-p., 3-color brochure. Includes photographs of separate parts with easy-to-understand explanation of each component. Is compactly designed to save space. Allis-Chalmers Mfg. Co.

L-27—Buy Log is a 92-p. catalog of low-voltage distribution equipment. Features product-selector charts, descriptions, consolidated pricing tables, and catalog number index. Line drawings and photos. General Electric Co.

L-28—Heating units are the subject of Catalog CS-600 which supplements Catalog 60. This fully illustrated directory includes speci-

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fications and prices for all types of heaters. Helpful line drawings. Edwin L. Wiegand Co.

L-29—Air contactor is clearly explained in this 6-p. fold-out with 3-color drawings and photos. Exploded views of portions of the machine make for easy understanding. Dimensions and capacities are given. Allis-Chalmers Mfg. Co.

L-30—Infrared heating for radiant heating is described in an 8-p., 2-color bulletin. Principles, advantages, and typical applications are discussed. Graphs and specification chart included. Fostoria Corp. Fostoria, Ohio

INSTRUMENTS & TESTERS

L-31—Facts on testing, Bulletin No. 5901, covers information on textile-testing equipment. Included are instruments for adhesion, tensile, tearing, vapor permeability, and sample preparation. Thwing-Albert Instrument Co.

L-32—Dial timer is explained in this new bulletin, N-309. Contains application data, construction, installation, specialized functions, electrical data, and basic circuit arrangements. Automatic Timing & Controls, Inc.

L-33—Seriplane, a precision laboratory instrument for visual inspection of all types of yarn, is described in this brochure. Deals with gage evenness, imperfections, and cleanness of fibers. United States Testing Co., Inc.

L-34—Potentiometer is thoroughly discussed in this 23-p. handbook, punched for three-hole looseleaf. Diagrams and labeled cutaway views illustrate completely each part of the instrument. Minneapolis Honeywell Regulator Co.

L-35—Fabric shift tester for evaluation of fabric blistering is featured in sheet listing application, specifications, operation, measurement, and labeled photos for swift test-result identification. United States Testing Co., Inc.

GENERAL

L-36—Interior-fire fighting equipment is catalogued in this 16-p. annual with general specifications, photos, and dimension charts. All portable type of interior-fire fighting apparatus is clearly depicted. Includes accessories. Fyr-Fyter Co.

L-37—Wool felts (chemical, physical, mechanical, and chemical-environmental properties) are listed in chart form in this 7-p. directory. Also included are typical uses and fabricating methods. Eight pages. American Felt Co.

L-38—Trademark glossary of manufactured fibers has both United States and foreign trademarks listed in convenient chart form. A helpful listing of generic names and product definitions is also included. American Viscose Corp.

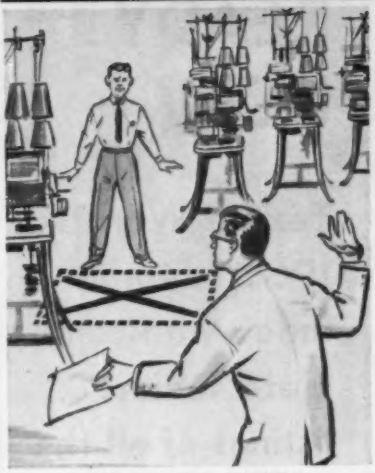
L-39—Appliances for laboratory use are contained in this 16-p. catalog, FS-269. Photos and drawings help to supply a clear picture of assorted models of laboratory clamps, holders, and supports. Fisher Scientific Co.

L-40—Charts and inks are featured in this well illustrated, 25-p. catalog. Includes charts, graphs, recording inks, ink selection graph, and maintenance recommendations. Minneapolis-Honeywell Regulator Co., Industrial Div.

L-41—Motors, (a.c. d.c. and gear types) are depicted in this 8-p. fold-out, Bulletin 2651. Also included are graphs, control panels, and high-frequency equipment. Louis Allis Co.

L-42—Tension idlers are described in a 4-p. folder. Included are illustrations of typical installations. Drawings give complete dimensions for both chain- and belt-drive tensioners. Brewer Machine & Gear Co.

Don't Lose that Machine!



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Advertisers' Literature

A350—Power Transmission. Write for Bulletin 23103. T. B. Wood's Sons Co.

A351—Testing Ovens. For complete information send for Bulletin 203-7GR. Despatch Oven Co.

A352—Cloth Guide. A free catalog is available on these air guides. Guider Specialty Co.

A353—Unions. Descriptive brochure on unions and fittings on request. The Fairbanks Co.

A354—Textile Tester. The CRE Brochure tells about the complete versatility of this instrument. Scott Testers, Inc.

A355—Sewing Machines. For further information, leaflets are available. National Industrial Machinery Corp.

A356—Screen Printer. Write for illustrated catalog and fabric samples. Edward S. Rudnick.

A357—Traveling Cleaner. Illustrated Bulletin 21A on request. Bahnson Co.

A358—Controller. Complete data on versatile 624 A/D available. The Bristol Co.

A359—Winders. To get more value from winding equipment, write for the following booklets: *Preventive Maintenance; Why Genuine Parts; Emergencies are Costly.* Foster Machine Co.

A360—"AC" Catalysts. Write for complete technical data. Monsanto Chemical Co., Plastics Div.

A361—Schreiner Calender. Complete descriptive literature and sample swatches on request. Robert Reiner, Inc.

A362—Transfer Cranes. For further information write for Booklet 2008. Cleveland Tramrail Div., The Cleveland Crane & Engineering Co.

A363—Textile Chemicals. For complete information on our line write for catalog. Jacques Wolf & Co.

A364—Rotary Pressure Joints. Write for complete details and literature. Johnson Corp.

A365—Textile Leathers. New Catalog L-160 on request. Charles Bond Co.

A366—Rotary Unions. Bulletins 700 & 800 on request. Perfecting Service Co.

TEXTILE WORLD . . .

News About Suppliers

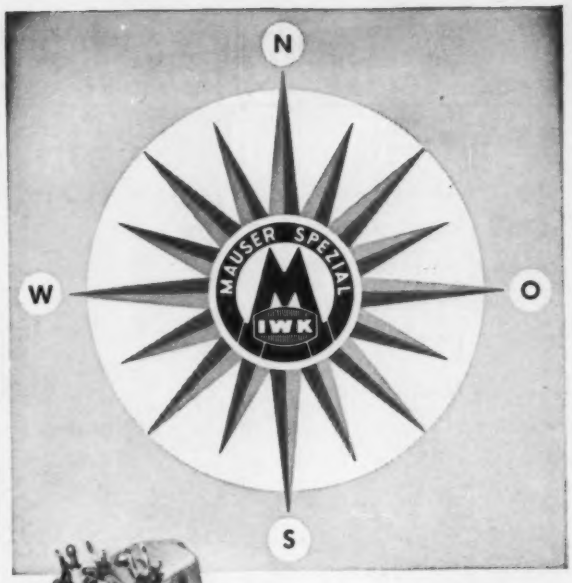
ABINGTON TEXTILE MACHINERY WORKS, North Abington, Mass.—Has acquired Expandex Corp., Wauregan, Conn. . . . **ALLIS-CHALMERS MFG. CO.,** Milwaukee, Wis.—Has changed the name of its Pump & Compressor Dept. to Fluid Dynamics Dept. . . . **AMERICAN CYANAMID CO.,** New York, N. Y.—Has appointed Howard Ketcham color consultant in the Dyes Dept. . . . **AMERICAN VISCOSE CORP.,** Philadelphia, Pa.—Has appointed William B. Zemann New England district sales manager for Avisco cellophane. . . . **AVISUN CORP.,** Philadelphia, Pa.—Has concluded an agreement with Shin Nippon Chisso Hiryo, K. K., of Toyko, Japan, to manufacture and market polypropylene resin, film, and fiber. The Japanese company is building a 30-million-pound polypropylene plant. Completion date: 1962. . . . **ARMSTRONG CORK CO.,** Lancaster, Pa.—Has named Samuel J. Charles, Jr., vice president and general manager of Armstrong Panam Corp., its Western Hemisphere trade corporation.

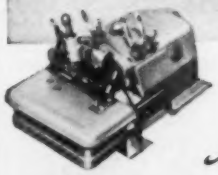
HUGH D. CONNELL (left) has been appointed division sales manager for Acme Steel Co., Chicago, Ill. RALPH BOLTON (center) has been named district manager of the newly established Atlanta district office for Erie Mfg. Co., Erie, Pa. QUIGG LOHR (right) has been elected a vice president of American Monorail Co., Cleveland, Ohio.

BATSON MFG. CO., Greenville, S. C.—Has begun an expansion program with a view to increasing capacity by 25%. Plans include a new boiler, new manufacturing and finishing machinery, and a dry kiln. . . . **BIJUR LUBRICATING CORP.,** Rochelle Park, N. J.—Has appointed Cotton-McCauley & Co., Pawtucket, R. I., as its Southern distributor. . . . **CHEMSTRAND CORP.,** Decatur, Ala.—Has announced that Edward Szlosberg has joined the Applications Research & Service Dept. . . . **CONTINENTAL GIN CO.,** Birmingham, Ala.—Has announced that it is moving its Southeastern warehouse and parts depot, now in Atlanta, to Augusta, Ga. The Birmingham and Atlanta sales districts have been combined into a single sales territory. E. T. Walrond, district sales manager of the territory, will supervise the combined territories from his office in Birmingham. . . . **COURTAULDS (ALABAMA) INC.,** New York, N. Y.—Has named Thomas G. Ethridge sales manager of the southern region with headquarters in Greensboro, N. C. Earl L. Stewart has been named sales manager for the northern region with headquarters in New York City.

CRANE MFG. CO., Lakeport, N. H.—Has been acquired as a subsidiary by Browning Laboratories, Inc., Laconia, N. H. . . . **CURTIS & MARBLE MACHINE CO.,** Worcester, Mass.—Has announced that Carroll C. Parker has joined the company's sales department. . . . **DAYCO CORP.,** Dayton, Ohio—Has named Eugene R. Knobel general traffic manager. . . . **DIXON CORP.,** Bristol, R. I.—Has moved its manufacturing, engineering, and sales facilities to Monroe, N. C., after serving 85 years in the Bristol location. . . . **DRAPER CORP.,** Hopedale, Mass.—Has announced that W. D. Hightower, a member of the Purchasing Dept., has assumed the duties of Charles O. Hearon, Jr., who was recently promoted to personnel manager. Ellsworth H. Sears has been appointed manager of the Industrial Engineering Dept. at the East Spartanburg plant.

. . . *Turn the page*





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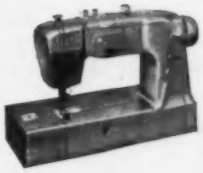

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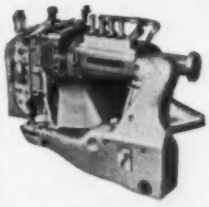

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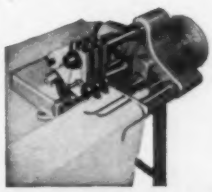
Flat-Seam Machines
Ribbon Cutting Machines



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News About Suppliers

CHEMSTRAND RESEARCH CENTER, INC., a wholly owned subsidiary of Chemstrand Corp., is now occupying these new quarters at Research Triangle Park near Durham, N. C. The 190,000-sq.-ft. building cost $5-million, and houses equipment costing about $1½-million.

E. I. DU PONT DE NEMOURS & CO., INC., Wilmington, Del.—Has announced that it will close its Old Hickory (Tenn.) rayon plant by August 1, 1961. The company has opened a new unit for the production of Dacron yarn at the Old Hickory plant. The Dyes and Chemicals Div. has moved its New York district sales office, laboratory, and warehouse to Clifton, N. J. . . . **EASTMAN CHEMICAL PRODUCTS, INC., CHEMICAL DIVISION,** Kingsport, Tenn.—Has appointed C. R. Lee to head the Buffalo sales office; Robert H. Cannon, Jr., to the newly created post of assistant sales manager in charge of field sales; and George J. Taylor to eastern regional sales manager with headquarters in Philadelphia. . . . **EASTMAN KODAK CO.,** Rochester, N. Y.—Has announced the appointment of James C. White as chairman of Tennessee Eastman Co., and Texas Eastman Co., divisions of Kodak at Kingsport, Tenn., and Longview, Tex. Louis K. Eilers has been named president of the two companies. Harry K. McNeeley has been named executive vice president of Texas Eastman Co., in addition to his position in the same capacity for Tennessee Eastman Co.

EMERY INDUSTRIES, INC., Cincinnati, Ohio—Has announced two appointments in the newly-formed Fatty Acid Div. D. R. Eagleson has been named sales manager, and R. W. Chapman becomes production manager. The newly-formed Organic Chemicals Div. has named J. W. Ritz sales manager of the division, and R. C. Bruch works manager of the Cincinnati plant. . . . **FAFNIR BEARING CO.,** New Britain, Conn.—Has announced that Fayette Leister, engineering vice president, has retired after 40 years' service with the company. . . . **W. F. FANCOURT CO.,** Philadelphia, Pa.—Has broken ground for a three-story plant and office building to be built on a 10-acre site in Greensboro, N. C. . . . **GENERAL ANILINE & FILM CORP.,** New York, N. Y.—Has named two appointments in the newly created Marketing Administration Dept. Dr. Fred Ebersole has been made manager of distribution and inventory control service, and Robert J. Hamilton has been named manager of advertising and promotion.

GENERAL ELECTRIC CO., Silicone Products Dept., Schenectady, N. Y.—Has named K. J. Morray sales manager with offices in Waterford, N. Y. . . . **GENERAL LATEX & CHEMICAL CORP.,** Cambridge, Mass.—Has announced the election of William J. Watson as a vice president of General Latex & Chemical Corp. of Ohio. . . . **HERCULES POWDER CO.,** Wilmington, Del.—Has started construction of a second multi-million-dollar polyolefin unit at Lake Charles, La., which will bring the total capacity of the company to 200-million pounds a year. . . . **INTERCHEMICAL CORP.,** Hawthorne, N. J.—Has announced that Theodore A. Jeffords has joined the Color & Chemicals Div. as technical representative in the Southern sales district with headquarters at Rock Hill, S. C. . . . **LEESONA CORP.,** Providence, R. I.—Has announced that its Patterson Moos Research Div. and Compagnie Generale de Telegraphie Sans Fi. (CSF) of Paris has signed an agreement to exchange technical information on thermoelectric materials and devices.

. . . *Begins on page* 167

MINNEAPOLIS-HONEYWELL REGULATOR CO., Minneapolis, Minn.—Has appointed Paul K. Webster metals-processing market manager and R. W. O'Reilly sales group supervisor in the Philadelphia branch office. . . . **MORRISON MACHINE CO.,** Paterson, N. J.—Has named A. V. Caporossi general sales manager for the company. . . . **NASHUA CORP.,** Nashua, N. H.—Has appointed Henry W. Bailey general manager of the Package Sealing Sales Div., and John F. McDermott sales manager of the division. . . . **NATIONAL STARCH & CHEMICAL CORP.,** New York, N. Y.—Has named Herbert C. Olsen manager of Textile Service and Development. . . . **OLIN MATHIESON CHEMICAL CORP.,** New York, N. Y.—Has moved its packaging laboratory to larger quarters at 59th Street, New York City. . . . **PENICK & FORD LTD., INC.,** New York, N. Y.—Has appointed J. P. Bainbridge, Jr., New England district sales manager. . . . **PITTSBURGH PLATE GLASS CO.,** Pittsburgh, Pa.—Has announced that its wholly-owned subsidiary, Columbia-Southern Chemical Corp., has become a division. . . . **PUTNAM CHEMICAL CORP.,** Beacon, N. Y.—Has announced the appointments of W. J. Ratcliffe as sales manager for the New England territory, and Richard Kopp as technical sales representative in the package dyeing field.

RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., Passaic, N. J.—Has appointed R. B. Park sales manager of industrial rubber and mechanical packings. . . . **RAYON PROCESSING CO.,** Pawtucket, R. I.—Has announced that its new name is Microfibres, Inc. . . . **SKF INDUSTRIES, INC.,** Philadelphia, Pa.—Has announced that it is seeking a site in Radnor Township (Pa.) on which to locate a new multimillion-dollar research laboratory. . . . **SCOTT TESTERS, INC.,** Providence, R. I.—Has appointed R. W. St. Onge technical sales and service representative. . . . **SINGER MFG. CO.,** New York, N. Y.—Has appointed J. J. Anderson a vice president of Diehl Mfg. Co., a wholly-owned subsidiary of Singer. . . . **SONOCO PRODUCTS CO.,** Hartsville, S. C.—Has announced the opening of a branch plant and sales office in Ravenna, Ohio. J. L. Henderson was named as plant manager with headquarters in Ravenna.

SPAULDING FIBRE CO., INC., in Tonawanda, N. Y.—Has named P. B. Schumacher assistant director of sales administration. . . . **TEXTILE MACHINE WORKS,** Reading, Pa.—Has named L. T. Yeager general sales manager. . . . **UNION CARBIDE CORP.,** New York, N. Y.—Has appointed M. A. Lynch, Jr., assistant to the manager of product marketing for the Silicones Div. R. L. Burke, Dr. T. J. Mahoney, and C. E. O'Rourke have been named product managers in new chemicals marketing. . . . **WARNER ELECTRIC BRAKE & CLUTCH CO.,** Beloit, Wis.—Has established a Japanese subsidiary, Warner (Japan) Ltd., of Tokyo. . . . **WHITIN MACHINE WORKS,** Whitinsville, Mass.—Has announced that F. M. Johnson has rejoined the organization as product manager for woolen and worsted machinery. . . . **WYANDOTTE CHEMICALS CORP.,** Wyandotte, Mich.—Has opened its first eastern plant in Washington, N. J.

SONOCO PRODUCTS CO., is now occupying this new $1¼-million research laboratory at Hartsville, S. C. (As reported in the January issue of TW.)

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Others talk about *maximum* fabric filtration . . . this one does it.

Koppers *new* MODEL F AEROTURN dust filter is not a modification of a filter designed for some other purpose. Nor is it an all-purpose unit. MODEL F AEROTURN has been designed from the ground up for the express purpose of collecting fibrous and linty materials with higher efficiency, greater economy.

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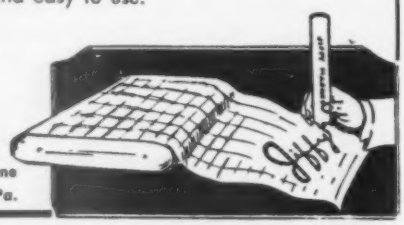

TEXTILE WORLD... News About Men

DR. ORMAN B. BILLINGS has been appointed manager of the chemical section, Joseph Bancroft & Sons Co., Wilmington, Del.

Richard G. Adams has been appointed head of glass-fiber research for Stevens Central Research Laboratories, Garfield, N. J., division of J. P. Stevens & Co., Inc., New York, N. Y.

W. J. Allred has been appointed production superintendent at Johnston Mill, division of Excelsior Mills, Inc., Pendleton, S. C.

George Asnip has been named president of the woolen and worsted manufacturing division of Deering Milliken, Inc., New York, N. Y.

Frank E. Barron has been promoted to assistant manager of Fieldcrest Mills, bedspread mill at Spray, N. C.

W. H. Ballenger has been named production superintendent of McCormick Mills, division of Excelsior Mills, Inc., Pendleton, S. C.

Dr. E. Berkley has joined the cotton department of Deering Milliken Service Corp., Spartanburg, S. C.

Joseph M. Bloomfield has been appointed director of a newly created research and development department for Bell Textile Co., Paterson, N. J.

James H. Blore has been appointed director of fabric development at Malden Mills, Inc., Lawrence, Mass.

H. Paul Bridges has been named general manager of Cliffside Div., Cone Mills Corp., Greensboro, N. C.

Brownell Bryant has been named production-control manager of Rockford Textile Mills, Inc., McMinnville, Tenn.

James H. Campbell has been named executive secretary of the Combed Yarn Spinners Association.

E. Henry Capplemann has been appointed engineer at Hatch Mill (a division of Deering Milliken, Inc.), Columbus, N. C.

D. O. Carpenter has retired as manager of the Oakland plant (Newberry, S. C.) of The Kendall Co., Boston, Mass.

John M. Cart has been appointed vice president of Powell Knitting Co., Spartanburg, S. C.

Wade F. Denning has retired as vice president and general superintendent of Wiscassett Mills Co., Albemarle, N. C.

Arthur B. Edge, III, has been named assistant to the plant manager of Hillside plant, Callaway Mills Co., LaGrange, Ga.

Jerry Ferron has been appointed general sales manager in charge of all fabric sales for Wamsutta Mill Fabrics, M. Lowenstein & Sons, Inc., New York, N. Y.

Harry E. Foster has retired after 50 years' service with Cannon Mills, Inc., Kannapolis, N. C.

Allen E. Gant has been elected president of Glen Raven Silk Mills, Inc., Glen Raven, N. C.

David Gliksmann has joined the Pacific Mills Div. of Burlington Industries, Inc., New York, N. Y., as manufacturing and merchandising coordinator for fabric development.

James L. Goldsmith has been named superintendent of the Oakland plant (Newberry, S. C.) of The Kendall Co., Boston, Mass.

ROBERT J. FROEBER (left) has been elected a director of Hanes Hosiery, Inc., sales subsidiary of Hanes Hosiery Mills Co., Winston-Salem, N. C. ZANAN CHILIBECK (right) has been elected executive vice president and a director of the sales subsidiary.

Alvin E. Green has been appointed supervisor of gray-goods operations at the Henderson (Ky.) plant of Bear Brand Hosiery Co., Chicago, Ill.

Clarence E. Hafford has been named president and chief executive of Glenoit Mills, Inc. (Janesville, Ohio), a division of Botany Mills, Inc., Passaic, N. J.

Paul E. Hilley has been appointed head of spinning mills for Coats & Clark, Inc., New York, N. Y. He will direct all four of the firm's Georgia spinning mills.

Austin Jambor has been named a vice president of Burlington House Fabrics Co., Greensboro, N. C.

I. Hart Jordon has been named manager of the Oakland plant (Newberry, S. C.,) of The Kendall Co., Boston, Mass.

Herbert H. Jones has been promoted to plant engineer at the Calumet plant of Callaway Mills, Co., LaGrange, Ga.

Roland H. Kayser, after 56 years' service, has retired as manager of development at Belding-Corticelli Ltd., Montreal, Que., Canada.

Handley H. Lewis has joined Callaway Mills Co., LaGrange, Ga., as superintendent of the company's Hillside plant.

B. Paul Lynam has joined Malden Mills, Inc., Lawrence, Mass., as director of quality control.

Robert J. Matthews has joined Glen Raven Mills, Inc., Glen Raven, N. C., as manager of the men's-wear division.

Joseph E. Meehan has been named president of the woolen manufacturing division for Deering Milliken, Inc., Spartanburg, S. C.

Sheldon B. Meiman has been named president of two

ROBERT M. GELTMAN has been elected president and treasurer of Geltman Sponging Co., Cleveland 3, Ohio.

S. R. ZIMMERMAN, JR., has been appointed executive vice president of Raybestos-Manhattan, Inc., Passaic, N. J.

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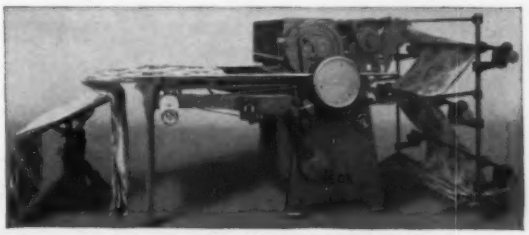

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new firms, Meiman & Co., Inc., and Meiman Mills, Inc., which will manufacture wool and man-made-fiber yarns in southern New England.

Richard M. Mitchell, Jr., has been named manager of the Tabardrey plant (Haw River, N. C.) of Cone Mills Corp., Greensboro, N. C.

Lewis S. Morris has assumed executive responsibilities at the Cliffside (N. C.) plant of Cone Mills Corp., Greensboro, N. C.

William W. Pittendreigh has been named director of manufacturing development for Riegel Textile Corp., New York, N. Y.

L. B. Ramsey has been elected chairman of the board of directors at Belding-Corticelli Co. Ltd., Montreal, Que., Canada.

George W. Ray, Jr., has been named superintendent of Mayo Mills, Inc., Mayo, S. C.

John D. Richards, manager of the Seattle plant of Bemis Bag Co., St. Louis, Mo., and head of its Pacific-Northwest sales division, has retired after 36 years' service.

Hans E. Runge has retired as executive vice president of Abney Mills, Greenwood, S. C.

W. Allen Traver, Jr., has been named manager of the Greenville (S. C.) plant of Franklin Process Div., Indian Head Mills, Inc., Cordova, Ala.

James M. Ward, Jr., has been named assistant manager of Tabardrey plant at Haw River (N. C.) for Cone Mills Corp., Greensboro, N. C.

Edward E. Williams, Jr., has been appointed manager of Eureka plant, Chester, S. C., for Springs Cotton Mills, Fort Mill, S. C.

W. Lindsay Wylie has been named manager of product development and technical service for knitting and tufting yarns in the textile division of United States Rubber Co., New York, N. Y.

OBITUARIES

G. Howard Chamberlain, 52, manager of the converting division, Greenwood Mills, Inc., Greenwood, S. C.

Alfred de Liagre, Sr., 87, former director, Botany Worsted Mills, Passaic, N. J.

Craig Groves, 66, former chairman of the board, Groves Thread Co. in Gastonia, N. C.

Robert G. Hafer, 53, owner of Hafer Hosiery Mills, Hickory, N. C.

Dr. Lyle E. Hessler, 57, professor in the Textile Research Laboratory, Texas Technological College, Lubbock, Tex.

Ray Holshouser, 61, superintendent, Cannon Mills Co., Kannapolis, N. C.

James F. Kennedy, 85, president, Standard Yarn Co., Worcester, Mass.

Harry B. Kilgore, retired manager of Woodruff plant, Brandon Mills, (part of Abney Mills), Greenwood, S. C.

John C. Lerchenmiller, 56, former manager, Rayflex Mfg. Co. Red Hill, Pa.

Robert J. Mathewson, 89, retired official and board member, Standard-Coosa-Thatcher Co., Chattanooga, Tenn.

Samuel S. Walker, 63, chairman of the board, Walker Knitting Co., Martinsville, Va., and president, Bassett-Walker Knitting Co., Bassett, Va.

John J. Weaver, 84, retired secretary-treasurer of the former Mountain Weaving Co., Allentown, Pa.

Jesse B. Williams, 84, retired superintendent of the former Aponaug Mfg. Co., Kosciusko, Miss.

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1—Type ST-3, 78" w. x 66" ftb. x 54" h., yr. 1949.

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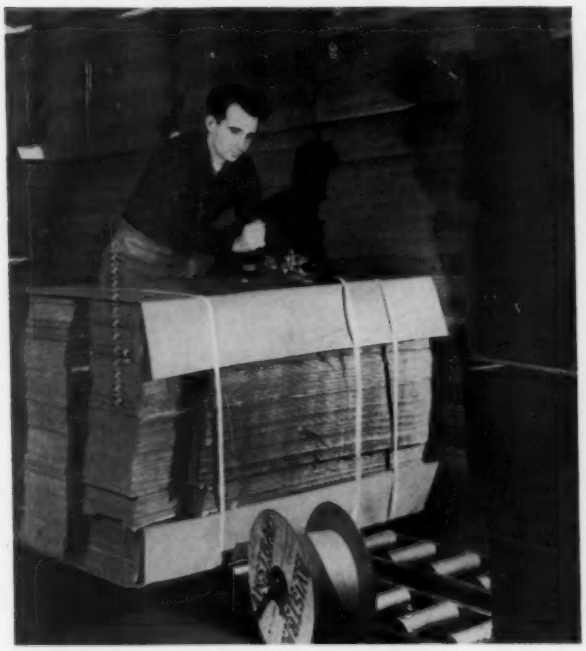

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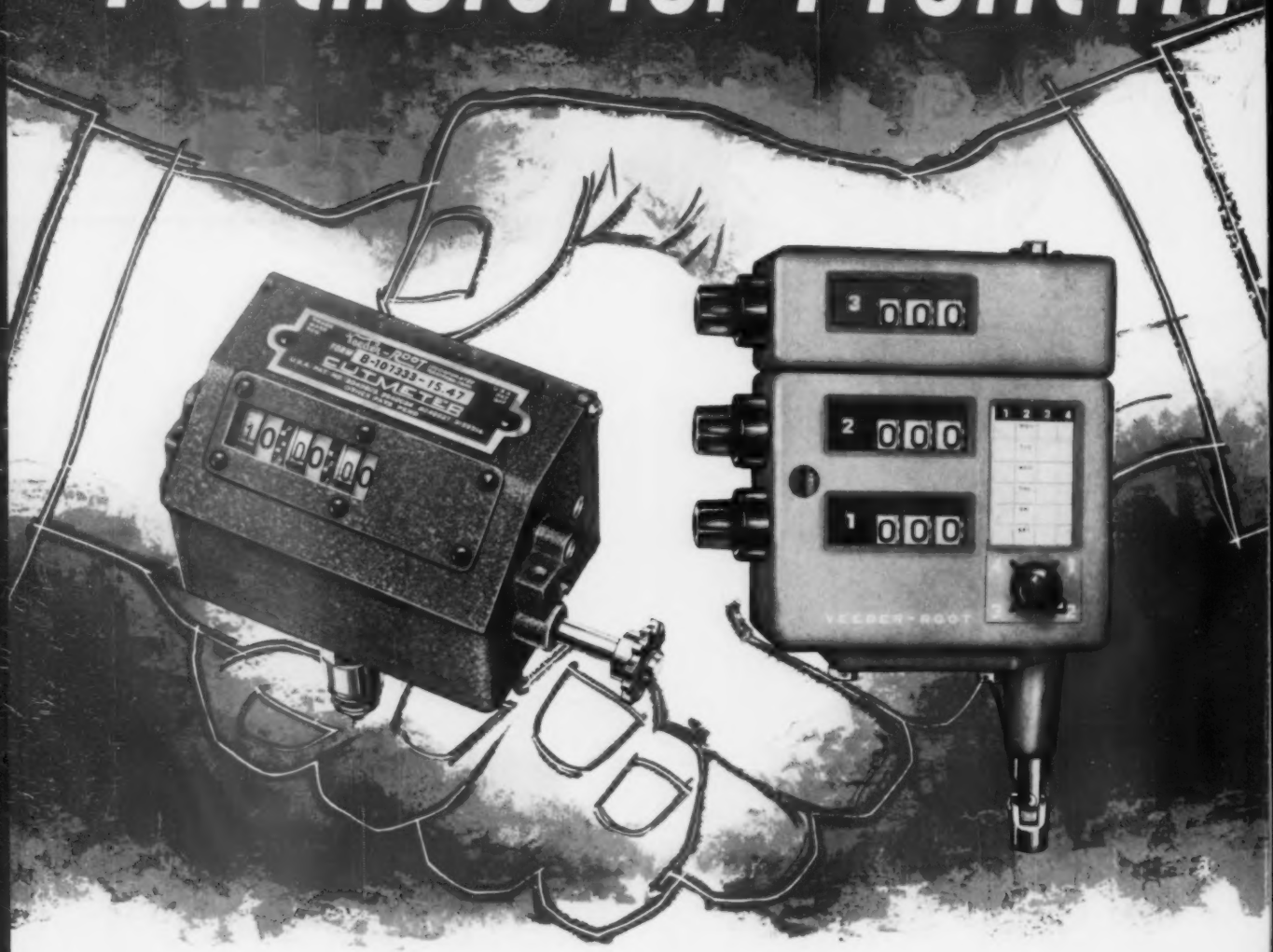

Veeder-Root Loom Cut Meters and Pick Counters

Take the Veeder-Root Loom Cut Meter—it can be pre-set to the exact cut-length required. Then weavers can concentrate entirely on quality and production, without any cut marks to watch for.

Cuts are automatically uniform in length . . . either single or double cuts . . . no shorts or longs . . . no waste. You get new advantages in dyeing, finishing and converting, plus constant *Count*rol of inventory.

Or, the Veeder-Root Pick Counter — available for *count*rolling single, two, three or four shift production. Pick counters help pinpoint low efficiency looms for immediate correction. Pick counter readings provide data for production control and for payroll.

Unless your looms are equipped with both loom cut meters and pick counters, you're missing an opportunity to increase efficiency, lower your costs. It'll pay you to check with your Veeder-Root representative — he'll give you complete details.

Veeder-Root

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